Genesee Farmer.

Vol. XIX, Second Series. ROCHESTER, N. Y., FEBRUARY, 1858. No. 2.

NATURAL AND ARTIFICIAL DRAINAGE.

In the practical operations of underdraining, it is important to have a correct knowledge of the nature and sources of springs.

The crust of the earth is composed of numerous strata, or layers, lying one over the other, some of which, such as gravel and sand, are highly porous and absorbent, and readily permit the passage of water; while others, such as clay and some rocks, are nearly, or altogether impervious.

When rain falls on a tract of country, part of it flows over the surface, and makes its escape by the numerous natural and artificial courses which may exist; while another portion is absorbed by the soil and the porous strata which lie under it.

Let the following diagram (fig. 1) represent such a tract of country, and let the dark portions repre-

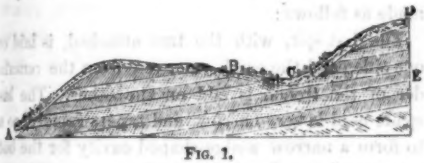


Fig. 1.

sent clay or other impervious strata, while the lighter portions represent layers of gravel, sand, or limestone, permitting a free passage to water.

When rain falls in such a district, after sinking through the surface layer (represented in the diagram by a narrow band), it reaches the stratified layers beneath. Through these it still further sinks, if they are porous, until it reaches some impervious stratum which arrests its directly downward course and compels it to find its way along its upper surface. Thus, the rain which falls on the space between B and D is compelled by the impervious strata to flow toward C; here it is at once absorbed, but is again immediately arrested by the impervious layer E; it is, therefore, compelled to pass through the porous stratum C, along the surface of E to A, where it pours forth in a stream, or forms a swamp.

Sometimes, in an undulating country, large tracts may rest immediately upon some highly porous stratum, as from B to C in the annexed diagram (fig. 2), rendering the necessity for draining less

Fig. 2.

apparent; while the country from A to B and from C to D may be full of springs and swamps, arising partly from the rain itself which falls in these latter districts being unable to find a way of escape, and partly from the natural drainage of the more porous soils adjoining being discharged upon it.

Sometimes the strata are disposed in the form of a basin. In this case, the water percolating through the more elevated ground collects in the lower parts of the strata toward the center, there forcing its way to the surface, if the upper impervious beds be thin; or, if otherwise, remaining a concealed reservoir, ready to yield its supplies to the shaft, or boring-rod of the well-sinker, and sometimes forming a living fountain, capable of rising many feet above the surface. It is in this way that Artesian wells are formed. The rain which

Fig. 3.

falls on such a tract of country at A and B (fig. 3), gradually percolates toward the center of the basin, where it may be made to give rise to an Artesian well, as at C, by boring through the superincumbent mass of clay; or it may force itself to the surface through the thinner part of the layer of clay, as at D, there forming a spring or swamp.

Again, the higher parts of hilly ground are sometimes composed of very porous and absorbent strata, while the lower portions are more impervious, the soil and subsoil being of a very stiff and retentive description. In this case, the water collected by the porous layers is prevented from finding a ready exit, when it reaches the impervious layers, by the stiff surface soil. The water is by this means dammed up, as shown in fig. 4. It was on such land that Mr. Elkington was enabled to accomplish such astonishing results, by cutting off springs by means of a few deep drains, aided by augur holes driven

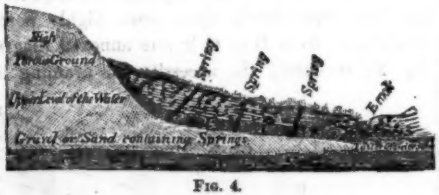


Fig. 4.

down into the porous watery strata which constituted the reservoir of the springs. The British government awarded him £1,000 for a description of the principle upon which his practice was founded.

In some districts, where clay forms the staple of the soil, a bed of sand or gravel, completely saturated with water, occurs at the depth of a few feet from the surface, following all the undulations of the country, and maintaining its position in relation to the surface over considerable tracts; here and there pouring forth its waters in a spring, or denoting its proximity by the subaquatic nature of the herbage. Such a configuration is represented in fig. 5, where A represents the surface soil, B the

Fig. 5.

impervious subsoil of clay, C the bed of sandy clay or gravel, and D the lower bed of clay, resting upon the rocky strata beneath.

In addition to the excess of water caused by springs, we have also to remove that caused by rain falling immediately on the land, and which in spring and autumn greatly exceeds the quantity required by plants. For this purpose, open ditches and deep dead-furrows between the lands are resorted to. They only carry off the surplus water after the soil is completely saturated; and this they effect by carrying along with it the best portions of the soil and the manure which may have been spread upon its surface.

In forming open drains, in loose soil, the sides should generally slope at an angle of 45 deg., which is the smallest angle at which earth, if it be at all

Fig. 6.

crumbly, will retain its position. The above diagram (fig. 6) represents a section of such a drain, three feet deep, and one foot in width at bottom.

Acute turns are to be avoided, more especially where the fall is rapid, or the quantity of water great; for the banks are generally hollowed out by the force of the current where such turns occur; and thus it may happen that at the very time when a free channel is of the utmost consequence in discharging some flood of rain, a stoppage or impediment may be created by the fall of a portion of the undermined bank.

Conduits under ground, or "blind ditches," are the only kind of drains that are permanently effective. These are formed in a variety of ways. Where tiles or stones can not be had, underdrains may be made as follows:

The first spit, with the turf attached, is laid on one side, and the earth removed from the remainder of the trench is laid on the other. The last spade used is very narrow, and tapers rapidly, so as to form a narrow wedge-shaped cavity for the bottom of the trench. The turf first removed is then cut into a wedge so much larger than the size of the lower part of the drain, that, when rammed into it with the grassy side uppermost, it leaves a vacant space in the bottom, of six or eight inches in depth, as in fig. 7.

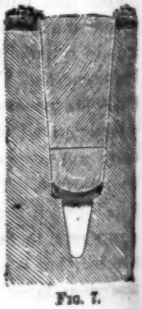


Fig. 7.

This is the cheapest kind of underdrain, and can be made on almost any soil except a loose gravel or sand. Unfortunately, however, such drains are very liable to injury, and at best can last only a few years.

Stone-drains can be made so as to be very durable and efficient. A few years ago, we saw one in England that had been regularly discharging a small stream of water for ninety years,

and was then as good as ever. Still, as a general rule, they are not so permanent as tile drains, and, where tiles can be obtained at reasonable rates,

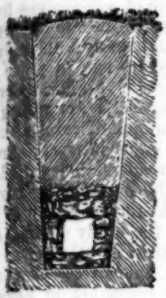


Fig. 8.

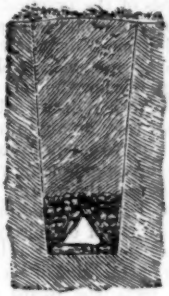


Fig. 9.

they are more costly, from the greater width of drain required. We give cuts of two kinds of stone drains. Fig. 8 shows a drain formed of flat stones, neatly arranged in the bottom of the trench. The largest and flattest stones are used in laying the bottom, and for covers; the smaller ones are placed on the sides; the whole forming an open tube, as represented in the cut. Fig. 9 shows a stone drain formed by placing first a flat stone in the bottom of the trench, by way of sole; upon this two other stones are placed, with their lower edges close to the sides of the trench, but having their upper edges resting upon each other. Sometimes two flat stones are placed, one on either side of the trench, without any sole, and having the space between them filled up with stones inserted edgewise. In forming stone drains, the workmen usually throw in all the smaller stones which may be left over after the culvert is formed, disposing them so as to cover up any apertures which may be left between the joinings of the larger stones.

Much difference of opinion exists as to what shape is best for draining tiles. The *horse-shoe* tile

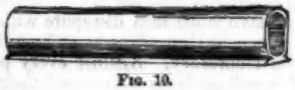


Fig. 10.

was first introduced, and has still many advocates; but as they require some kind of sole to rest upon in loose soils, we incline to the opinion that small

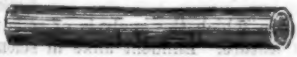


Fig. 11.

pipes are preferable. *Theoretically*, the oval (fig. 10) is the best form of pipes; but from the difficulty of placing them in the drain expeditiously and properly, we think they are not *practically* so good as the round pipe (fig. 11), and which can be made at less cost.

In cutting the trenches for the reception of pipe tiles, a great improvement has of late years been introduced, by the employment of the bottoming tools figs. 12, 13. In clay soils, the trench should be cut of a convenient width for the operations of the workman, to within nine inches or a foot of the total depth; the bottoming tool is then employed to take out the remaining portion, in the form of a narrow spit, of just sufficient size to admit the pipe. By this means no more work is done in cutting than is required, while the fitting of the pipes to each other is secured. In stony soils it is impossible to remove so great a depth as a foot in this manner; but, at all events, a few inches should be taken out, so as to secure the steady arrangement of the pipes. Fig. 14 represents a trench cut in clay ready to receive the pipes, and fig. 15 represents a section of the finished drain.

Fig. 12.

Fig. 13.

Fig. 14.

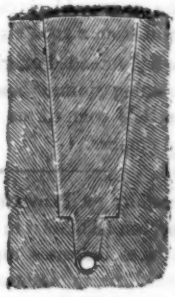


Fig. 15.

All soils, but especially those containing clay, possess the property of expanding when wetted, and contracting when dried; so that after the drain has removed a portion of the water, a considerable contraction takes place, especially in a dry season; but as the ends of a field can not approach each other to suit the contraction, both soil and subsoil are torn asunder, and divided into small portions by a network of cracks and fissures. The tendency of draining is to increase and guide the course of this cracking action. The main fissures all commence at the drain, and spread from it in almost straight lines

into the subsoil, forming so many minor drains or feeders, all leading to the conduit. These main fissures have numerous small ones diverging from them, so that the whole mass of earth is divided and subdivided into the most minute portions. The main fissures are at first small, but gradually enlarge as the dryness increases, and at the same time lengthen out; so that when a very dry season happens, they may be traced the whole way between the drains. The following cut (fig. 16) will give some idea of this cracking action.

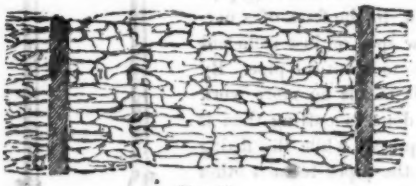


Fig. 16.

When the fissures are once formed, the falling of loose earth into them, and the grooving action of the water which passes through them, prevents them from ever closing so perfectly as to hinder the passage of water; while each successive summer produces new fissures, till the whole body of the subsoil is pervaded by a perfect network of them, which gradually alters the very nature of both soil and subsoil; and in connection with judicious and liberal manuring, has the effect of converting poor cold clays into something not very different from a good clay loam.

We had intended offering some practical remarks on draining springy lands, &c., but the length of this article compels us to postpone them to some future number.

Draught of Plowing at Different Depths.—It has been laid down in the books, that the draught of a plow increases rapidly when the furrow is deepened, or, in mathematical terms, according to the *squares of the depth;* that is to say, that if the draught at four inches deep be 252 lbs., at seven inches it will be as 49 to 16, or 756 lbs. But the experiments of Pusey have proved that this is erroneous. He found that in plowing a furrow nine inches wide and *five* inches deep, the draught was 322 lbs.; at the same width and in the same soil, *six* inches deep, it was 308 lbs.; at *seven* inches, 350 lbs.; at *eight*, 420 lbs.; at *nine*, 434 lbs. It will be seen that the rate of increase is much less than has been generally supposed; and the facts above indicated furnish an additional argument in favor of deep plowing, and one seldom alluded to by agricultural writers.

THE ANALYSIS OF SOIL ANALYSES.

Friend Harris:—It is pretty evident, from your reply to my last letter, that you desire a thorough analysis of the practical value of soil-analyses from me, or you would not have asked me "to define my position more definitely," and quoted an analysis made by me some twelve years ago to prove "a change of views on this subject." So far as a pressure of other duties will permit, I am willing to discuss this, or any other branch of rural science, with you, so long as there is either interest or profit in the investigation for your readers. They will best understand the merits of the question by having placed before them a brief historical review of the application of chemistry to the study of soils, and thereby learn what other men in other countries think of the value of these chemical researches (*a*).

In 1805, the Board of Agriculture in England engaged Sir Humphrey Davy to deliver an annual course of lectures before them on Agricultural Chemistry, which were continued eight years, and then published in 1813. Davy was eminent as a philosopher, and the discoverer of the metallic bases of potash, soda, lime, and magnesia; and greatly advanced, by his successful labors, the science to which his life and genius were devoted. He not only analyzed soils to the entire satisfaction of his employers and the public, but probably did more than any other man to introduce the practice on the continent of Europe, and, ultimately, into this country. His knowledge of analytical chemistry applied to the study of soils, enabled him to ascertain and publish to the world the important fact that they are mainly composed of *three earths*, viz: siliceous sand, clay, and carbonate of lime. He learned, by repeated analyses, that land in which there was little beside pure sand, or pure pipe clay, or chalk, was uniformly barren. Acting on his equally wise and scientific suggestions, enterprising farmers soon found by actual experiment that to mix these earths—that is, sand with clay, clay with sand, and lime with both, where analysis revealed that either was deficient in quantity (*b*)—resulted in an increase of fertility. Nor was an analysis necessary to reduce to practice the principles thus established, except in cases of doubt as to the deficiency of lime, or it might be as to an excess of iron in clay or sand. Had practice in the field failed to confirm the truthfulness and value of the teachings of the chemist, it is obvious that his labors in that behalf would soon have fallen into disrepute with all who had tried to benefit themselves by seeking the assistance of the laboratory. Against every prejudice, and all odds, soil-analyses maintained their ground, and rapidly extended into all civilized and progressive nations.

Ten years after Sir Humphrey had published his *Lectures on Agricultural Chemistry*, Count Chaptal, a peer of France, a member of the Institute, and a large land-holder, published his *Agricultural Chemistry*, in which the analysis of soils forms a prominent feature. Eminent alike in science, fortune, political and social position, he had no possible inducement to speak more favorably of the value of soil-analyses than justice and truth demanded. He gives full and carefully-prepared directions for the analysis of soils by *farmers;* and his first sentence on the subject is in these words: "Though experience and long observation may enable us

agriculturist to become acquainted with the nature and degree of fertility of each part of his land, it will in most cases be convenient for him to acquire this knowledge by shorter and more direct methods." He adds: "I shall not point out the process of an analysis with the most minute exactness; this would place it beyond the skill of the greater part of agriculturists to perform; and the precision of the results would be useless for the purpose which I have in view. I shall limit myself to describing the steps which ought to be taken for ascertaining the nature of the principal substances, whether earthy, saline, metallic, vegetable, or animal, which enter into the composition of a soil; while it is necessary to insist only upon those which concur most powerfully in rendering it fertile."

He quotes as authorities, DAVY, BERZELIUS, BRANDT, FOURCROY and VAUQUELIN, BERGMANN, and others well known to the scientific world. In the article on "The Composition of Arable Lands," page 24, he says: "In order to know the earthy composition of those soils which have been considered the most fertile in various climates, I shall have recourse to the analyses of them by men worthy of the utmost confidence."

BERGMANN found that one of the most fertile soils in Sweden contained:

Coarse silex	30 parts
Silica	26 "
Alumina	14 "
Carbonate of lime	30 "
	100

GIOBERT analyzed a portion of fertile soil from the neighborhood of Turin, in which the principal earths were in the following proportions:

Silica	from 77 to 79
Alumina	" 9 " 14
Carbonate of lime	" 5 " 12

An excellent soil for wheat (see *Davy's Agricultural Chemistry*, page 162) gave:—

Carbonate of lime	26
Silica	32
Alumina	29
Animal and Vegetable matter and moisture	11
	100

I could easily fill a small volume with soil-analyses made in the first quarter of the present century by no mere pretenders, but by the illustrious fathers of the science of Analytical Chemistry, which have proved to be of incalculable value to agriculture. It is true, they were quite limited in extent as compared with the most critical and minute researches of the best analysts of the present time. They demonstrated, however, this pregnant fact: that all soils, in all climates and countries, distinguished for their enduring fruitfulness, abound in *lime*, as well as clay and sand (c). This fact being fully established, I early felt a deep interest to ascertain, if possible, *what is the least quantity of the calcareous element* in common soils which will suffice for all useful purposes in tillage and husbandry. In what way can this question be settled better than by first analyzing one's arable fields to learn the exact amount of available lime in the soil; and then experiment in the application of lime, from time to time, and *on many fields in many places*, to establish a mass of facts bearing on the grand single problem to be solved? For the last thirty years, I have never long ceased from urging upon public attention the vast importance of having experimental farms to develope *new* and valuable truths in connection with applied chemistry. In this matter I am happy to know that the Editor of the *Genesee Farmer* and the writer are entirely agreed; and there is equal agreement in reference to the propriety of analyzing soils with a view to advance the science of agriculture; but you condemn in toto researches of this kind made for the special benefit of the owner of the soil analyzed. Now, if the latter has confidence in the man whom he employs to make one or more analyses, and is satisfied with the performance and its practical results, why should any other man officiously interfere in the matter? Why not leave the parties to manage a purely personal business transaction to suit themselves? (d) My course has been not to advise farmers either to have their soils analyzed, nor to abstain therefrom. In 1846, I had a class of students, some of whom wished to learn the art of analyzing soils as practiced in the best laboratories; and for the benefit of such, I was willing to be responsible for the general accuracy of their statements and labors under my instruction for a compensation that would cover the cost of pure chemicals consumed, and the probable breakage of delicate aparatus; and at the same time, I believed the information given would be worth to the recipients all they paid for it, if not much more. Experience, however, soon taught me that I could acquire more useful knowledge in reference to the food of agricultural plants—its scarcity or abundance in the soil—by operating on a larger quantity of earth than by following my text books in that particular. You say: "Dr. LEE has never informed the agricultural public that there has been *any change* in his views on this subject since the above article was written." This is a mistake. The article referred to was written in the early part of the year 1846; and in the January number of the *Farmer* for 1847, in a leading editorial, I "informed the agricultural public" that I "claimed to have made great *improvements* on the ordinary process of conducting these chemical manipulations, by which farmers' sons only 16 years old, at their first trial, extracted and correctly weighed a mineral equal to the 15,000th part of a soil." At that time I had an extremely delicate balance—the largest weight used upon it was 1000 grains, and the smallest the 100th part of a grain. Between these, there are 100,000 parts which may be indicated by the balance. In illustrating my improvement, I said: "As we work for the public good, and pay out five dollars for chemicals where we get one back, we will state a single process:

"In analyzing the soils in the southern tier of counties in this State in the ordinary way, by taking only 100 grains, we find scarcely a trace of lime; and yet all plants that grow there contain notable portions of this mineral in their ashes. As all practical farmers, as well as men of science, concede the great value of lime in all soils, and especially for growing wheat and other cereal plants, we have regarded it as worth some trouble and expense to find out a way to determine the quantity of lime in a soil, though it shall make only one part in one hundred thousand. This is our process: Burn off the organic matter in ten pounds of the earth, by repeated doses, in a large crucible or a clean iron basin. Two pounds of this may be treated at a time in a large glass basin so thin that it will stand the

heat of a spirit lamp without breaking; or it may be placed in a sand-bath, and the soil boiled in diluted muriatic acid. As we do not care to get out all or any of the allumina and iron, it is not necessary to have more than an ounce of acid to two pounds of soil, and distilled water enough to cover the mass one or two inches deep."

Without copying the process in detail as there given, it is easy to see that as 10 lbs. of soil weigh over 70,000 grains, if one of lime is found and *no more*, there exists one part in 70,000; if only the tenth of a grain is obtained, then the proportion is as one to 700,000; and if the smallest weight is just balanced, the ratio of lime is to the soil as one part to *seven million*.

The next paragraph begins with these remarks: "There is nothing to prevent our leaching one or two hundred pounds of any soil, either with cold or hot water, or diluted vinegar, sulphuric, nitric, muriatic, or other acid, to dissolve out the *phosphate of lime*, or any other valuable constituent of our crops. Have not practical men long leached the earth of plants (their ashes), and evaporated the solution to obtain their potash and soda? And who will say that we may not perform a similar operation to show how much of potash and soda there is in the soil that yields the ashes of forest trees? The science of Chemical Analysis is now in its infancy; and for one, we protest against the injustice of popular writers, like HENRY COLMAN and others, who are most liberally paid for their compositions, in seeking every possible opportunity to disparage the value of this science?" * * * "The great volume of Nature is alike open to all; and why should not all read, and understand the original text? We are confident that we shall be able to determine how much of the substance of the soil is ordinarily consumed in forming 100 pounds of wheat, corn, oats, clover, turnips, and potatoes. In true inductive science, there is no guess work." (*e*)

Some time when you are in want of a subject for editorial comment, by copying the whole of the article of which the above are extracts, you will perhaps have a theme not unworthy of your logical acumen, and professional attainments. In the first number of the *Journal of the United States Agricultural Society*, prepared by me as Secretary of the same, I copied from the *American Journal of Science and Arts* a carefully-prepared paper entitled "Notes and Observations on the Analyses and Character of the Soil of the Scioto Valley, Ohio, with some general considerations respecting the subject of Soil-Analyses; by DAVID A. WELLS, Cambridge, Mass." While I would speak of this paper as worthy a place in the *Genesee Farmer*, for the instruction of that large class of its readers who are *students* in the science of their calling, I will content myself with copying a single paragraph:

"There is one other subject connected with those analyses, which I consider of the highest importance, and to which I would direct special attention. Dr. DANA, of Lowell, in the course of many years' experience, has collected and preserved the results of more than four hundred analyses of soils, from the northern portion of this country. The analyses of the soils I have made from Ohio, and the analyses of all the soils resulting from the drift agency, do not differ materially so far as regard their inorganic constituents. That is to say, the soils of Ohio, yielding, with little or no culture, from seventy to eighty bushels of corn to the acre, *are no better*, so far as their mineral composition is concerned, than many of the Massachusetts soils which have a reputation for sterility."

According to Mr. WELLS, the greater "fineness of the elementary particles" of the Scioto soils, and "the amount and condition of their organic matter, impart to them their superior productiveness." I commented at some length on the labors and views of Mr. W., mainly to promote the more critical and refined investigation of the true sources of fertility, and of the real cause of infertility, in arable lands. As I still have the same object in view, permit me to copy a few remarks which I then made. "In the analyses we are told how much water, "hygrometric and combined," the soils contain, and the amount of "waxy and resinous matters extracted by alcohol and ether;" but we learn *nothing of the quantity of nitrogenous elements* that may be present in any form. This omission is a serious defect, for ammonia, whether absorbed from rains, dews, and the atmosphere, or supplied by *decaying vegetation and the bodies of animals*, is too valuable an element to be passed by as a thing of no account. While waxy and fatty matters in soils require alcohol and ether to dissolve them, which no farmer can apply to his land, ammonia is not only soluble in water, but it increases the solubility of both the organic and inorganic food of plants. The unscientific reader will appreciate the value of ammonia in the production of crops, when we inform him that it sells at sixpence a pound (eleven cents) in England, as it exists in guano, and other commercial manures."

I suggested that chemists ought to devote attention to these points: "Do the plants that naturally grow on the Scioto, or other rich bottoms, contain, as a whole, more organized nitrogen than plants that grow on comparatively poor upland, from which, perchance, the finer particles of sand, clay, and mold, have been washed and deposited as sediment along the banks of streams below? And if the vegetation of river flats and fertile intervals is richer in nitrogenous compounds, to what agencies is this increase of organized nitrogen to be ascribed?"

The above was written six years ago, and I have since endeavored to answer my own questions by appropriate researches, and embody an exposition of the facts and principles involved, in a work, still in progress, on "The Philosophy of Agriculture."

In drawing up the Constitution of the United States Agricultural Society, I took good care to insert a section providing for the organization of a National Board of Agriculture, to carry into effect the plan of the great and good WASHINGTON. Men of small minds and selfish purposes have rejected it for half a century; but their triumph can not last always, and Tillage and Husbandry are certain to rise, in this nation of republican farmers, to the dignity of a learned, a truly scientific, and an honorable profession. To place soil-analyses in their proper sphere of usefulness, the country greatly needs a national institution which has at its head men of patriotic motives, of cultivated common sense, who know how to use and successfully apply science to the advancement of American agriculture. Does the United States Agricultural Society come up to this requirement? Not to cultivate the science, nor the literature of agriculture, and be content with the rather overdone annual display of

more cattle shows, horse shows and racing, and the idle, if not vain, exhibition of *men* as well as beasts, is to excite the regret, and call forth the reluctant censure of thousands of the best friends of agricultural progress and improvement. Analytical chemistry, in its application to soils and their products, needs the fostering care of minds at once elevated by proper culture, free from that love of "empty show" which "splits the ears of groundlings," and willing to labor for the equal elevation of all who are less informed than themselves. If a depraved popular taste delights in bull-fights, as in Spain, or in any thing akin thereto, it needs not the stimulus of the United States Agricultural Society, in addition to all other *stimuli*, to keep it alive in this country. It is that quiet, humble, close study, which begets learning, science, virtue, and happiness, that demands the support of public opinion and of our free institutions. The study of soils can not be carried to any considerable extent and accuracy, without the assistance of analytical chemistry; and instead of rejecting soil-analyses as useless and worthless, they should become more diversified—more comprehensive in their investigations—more in harmony with the broad and varied agriculture of this extended republic. D. LEE.

REMARKS.—The above able sketch of the history of Analytical Chemistry, as applied to the composition of soils, is quite interesting; and our readers will unite with us in thanking Dr. LEE for the clear, concise, and enthusiastic style, in which he handles the subject. We can not conceive, however, that Dr. LEE intends it as a reply to our remarks on the practical inutility of soil-analyses, in the September and November numbers of the *Genesee Farmer* of last year. We there showed that a chemist is utterly incapable of pointing out any difference in chemical composition between two soils, one of which produced a large crop of turnips, and the other a crop that was not worth gathering; or the difference between two soils, one of which produced only fifteen bushels of wheat per acre, and the other thirty-five bushels per acre. He can, by analysis, determine whether a soil is destitute of any element of plant-food; but this, we showed, is of no practical use, from the fact that if any plant grows on the soil, we have positive proof that the soil contains all the elements necessary for the growth of plants. If it did not, no plant would grow upon it. In analyzing a soil, therefore, the object is not to ascertain whether it contains all the elements necessary for the growth of plants, but whether it contains them *in sufficient quantity* for the production of profitable crops. We brought forward several facts which we thought clearly showed that the chemist could not at present determine this point. Put a hundred tons of manure on one acre of soil, and leave an adjoining acre without anything, and send a sample of each to the chemist, and we contend that the most searching analysis he can make will not enable him to tell which soil has been manured and which has not; and yet one may produce good crops, and the other, crops too poor to harvest.

On these and similar facts, we based our objections to the practical utility of soil-analyses. These objections Dr. LEE has not attempted to answer, and it seems hardly worth while to discuss other and less important branches of the subject. We will, however, briefly allude to one or two points in the above article, which seem to have a slight bearing on the matter in question.

(*a*) We can easily show, if necessary, that at the present time many of the ablest chemists in Europe entertain doubts of the practical value of soil-analyses. We have no hesitation in saying that no European chemist who has had any experience in soil-analyses, attaches half as much importance to them as he did a few years ago.

(*b*) Any one who has examined the old "marl-pits" of England, will come to the conclusion that "enterprising farmers" had mixed clay with sand (if not sand with clay) long before Sir HUMPHREY DAVY recommended the practice, and that it "resulted in an increase of fertility." That English farmers have ever been in the habit of having their soils analyzed before concluding to put clay, or sand, or lime, on any particular field, may well be questioned. Here and there a land-holder or an amateur farmer procures an analysis of his soil; but we never happened to meet with any one who found any particular benefit from it, and the practice is now nearly abandoned.

To analyze a soil in order to ascertain whether it required lime, was a pet theory of many chemico-agricultural writers some years ago. An incident in the experience of JOHN HILDITCH, Esq., of Stanton, England, which he related a few years ago, when we had the pleasure of visiting his beautiful farm, will throw light on this subject. Sir HUMPHREY DAVY had recently published a "simple test for lime," and stated, truly, that if a soil was destitute of lime, it would not produce wheat. The test was easily applied. It was simply to pour a little muriatic acid on the soil, and, if it effervesced, the soil contained carbonate of lime, and would produce wheat; but if it did not effervesce, it did not contain lime, and must be limed before it could grow wheat. Mr. H., who is a gentleman of great intelligence, as well as a most excellent farmer, and one ever ready to carry out the suggestions of science, had three large fields prepared for wheat when he read Sir HUMPHREY'S book. He immediately took samples of soil from the three fields, and applied the acid. Two effervesced, but the other did not. "Now," said he, "according to Sir

HUMPHREY, this soil contains no lime; but it is too late to lime it. What shall I do?" He repeated the test, but obtained the same result. He had great confidence in Sir HUMPHREY, but did not know what to do. He at length concluded to risk the seed, and if the wheat did not grow, to sow the field to turnips the next spring. The three fields were sown. The wheat came up well on all three, grew, and continued to grow, lime or no lime. To the surprise of Mr. H., and in spite of Sir HUMPHREY, the field which would not effervesce produced the *best crop of wheat of the three*, averaging *upwards of fifty bushels per acre!*

(*c*) The analyses proved that all fertile soils contain lime; and the fact that any plant will grow on these soils, proves the same thing: so that, in this particular, the analyses were unnecessary. Have they proved how much lime a soil should contain to enable it to produce maximum crops? We assert, without fear of contradiction, that they have not. The fertile soil in Sweden analyzed by BERGMANN, as quoted above, contained 30 per cent. of lime. The soil of some of the best farms in the Genesee Valley does not contain two per cent. of lime. The soil in the Ree-Ree Bottom in the Scioto Valley, Ohio, and which is so astonishingly fertile that it has yielded annually great crops of corn for fifty-one years, contains, according to Prof. WELLS, less than half of one per cent. (0.4) of lime. Now, here are three soils all remarkable for their fertility; and yet the Swedish soil contains over fifteen times as much lime as that of the Genesee, and more than seventy times as much as that of the Scioto Valley. We think these analyses "demonstrate *this* pregnant fact," that ordinary soil-analyses can not enable us to decide whether or not a soil requires liming to produce maximum crops. The analyses of several soils in Massachusetts, in no way remarkable for their fertility, show that these soils contain five times as much lime as the rich soil in the Ree-Ree Bottom. If "the illustrious fathers of Analytical Chemistry" could tell farmers which soils required lime and which did not, they could do what can not be done at present.

(*d*) We do not so understand the duties of an agricultural journalist. His readers expect from him reliable information on all matters of public interest to the farming community. He has no right to "officiously interfere" with *private* business arrangements, but he has a right to express his opinion on all *public* recommendations. If the publisher of an agricultural paper endeavors to get hold of the farmers' hard-earned dollars by urging them to purchase "improved" and "nitrogenous" superphosphate of lime, "Chilian guano," and other comparatively worthless fertilizers, all agricultural journalists have an undoubted right to guard their readers against the imposition. So, too, if a chemist publicly offers to analyze the farmer's soil for from $5 to $50, and promises for $25 to furnish him with "a letter of advice" which will enable him to produce great crops at a small outlay—and if the public journalist has good reasons to *know* that it is utterly impossible, from the nature of the case, for the chemist to furnish such information—he has a right to inform his readers of the fact. If the chemist asks for the reasons on which the public journalist bases his opinions, and these reasons are freely stated, the chemist, when he finds himself unable to set aside the facts, or to show any inaccuracy in the logic, can not with a good grace turn round and say, "Well, it is none of your business." The advocates of soil-analyses have had the free use of the agricultural press in urging their claims upon public attention; they have not been slow to avail themselves of the opportunity; and they have been seconded by nearly all agricultural lecturers and writers during the last twenty-five years.—Farmers have been urged over and over again to have their soil analyzed. The advocates of soil-analyses, in most cases, evidently do not understand the question; and it is high time they should cease their recommendations, or give some good reasons for their advice. They have many able writers among them, and the agricultural press is at their service. They have therefore no cause to complain when their claims are candidly and courteously criticised.

(*e*) The fact that Dr. LEE thought one pound of soil enough for an analysis in 1846; and afterwards, in 1847, thought from "one to two hundred pounds" desirable; and now, in 1857, recommends from 500 to 1800 pounds; indicates that he has little faith in ordinary soil-analyses, where only a few ounces of soil at most are used. We believe, furthermore, that all who have had much experience in analyzing soils, will agree with us that it is better to operate on a small quantity of soil than on a large quantity. Half an ounce will afford more accurate results than half a pound. With the fine balances to which Dr. LEE refers, it is impossible to operate on large quantities. We shall be convinced of the advantages of analyzing half a ton of soil when the thing has been done, and afforded satisfactory results. This, however, is not the question we are discussing. It is not whether, *at some future period*, chemists will be able to analyze soils with sufficient accuracy for practical purposes; but whether they have hitherto been able to do so, or whether they are *now able*. When any chemist

by analysis, can tell the difference between a soil which has been dressed with 500 pounds of guano per acre, and one which has had nothing on it,—when, in other words, he can tell by analysis the difference between a soil which will produce a good crop of wheat and one which will not,—we will cheerfully take back all we have said against the utility of soil-analyses.

THREE-HORSE WHIFFLE-TREES.

It has been shown by the experiments of Pusey and others, that velocity has no influence upon draught in plowing; in other words, that the rate at which the horses walk, exerts no influence on the

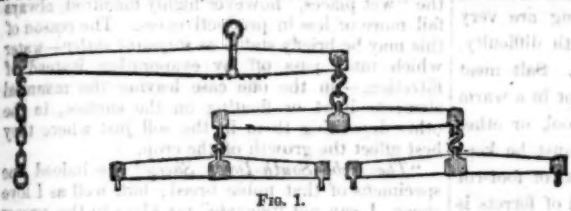


Fig. 1.

draught of the plow. And this result is in accordance with the results of experiments upon friction, which indicate the entire independence of friction on velocity. It is true, the dynamometer indicated great *irregularity* in the draught of the plow consequent on an increase of velocity;—a stone in the soil, on which the point of the plow-share should impinge with double the ordinary velocity, would obviously cause a momentary strain on the dynamometer of double the ordinary intensity; but the *average* draught is the same, or very nearly so.

This fact indicates the importance of employing draught animals which *naturally* walk at a rapid pace;—it is a fact which should not be overlooked in considering the relative advantages of employing horses or oxen in plowing.

We have sometimes thought that the generality of American horses were somewhat too light for farm work; but whether this be so or not, there can be no doubt that light, active, muscular horses, that naturally *walk* (not trot) at a smart pace, are more economical plow-horses than heavy, slow ones. Other things being equal, the quantity of food required by a horse is in proportion to his weight; and, so far as plowing is concerned, there is undoubtedly greater advantage in keeping a team of three light, active horses, than a span of heavy, sluggish ones.

Light horses, however, work to great disadvantage in plowing when they are taxed so heavily that they can not walk at their natural rate. On the other hand, there is a loss of power when they are not taxed enough, inasmuch as the power required *to carry their own weight* is the same in either case. On this point judgment is required. It is an unnecessary expenditure of power to employ a heavy team to do that which a light one would accomplish; and, on the other hand, to attach a light team to a plow which they can not take through the soil at their natural pace, involves an equal loss of power. Better use three horses abreast, and let them walk at a good smart pace.

Whiffle-trees for three horses abreast are usually constructed as shown in the annexed engraving (fig. 1). The two horses are attached to the short end of the first draught-bar, and one at the longer end, which should be twice the length of the other, so that the labor will be equally divided among the three.

Fig. 2 shows a more complicated set, but one in which the horses are more uniformly arranged. Here the resistance is divided, by the first draught-bar, into two equal portions of one and a half horse-power each, and by means of the second pair of bars these are again distributed so that three horses may be attached, the middle horse, it will be seen, taking the long end of the second pair of bars; and as *a c* is twice the length of *a b*, the force attached at *b* being thus balanced by half the amount of *c*, one horse in the middle is able to balance the force of the two at its sides.

Any one can make these whiffle-trees. No farmer

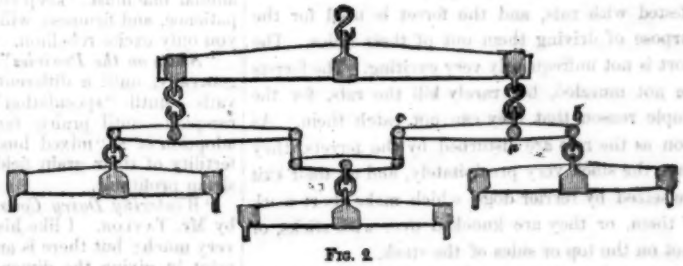


Fig. 2.

should be without a set. Now is the time to attend to this matter, while you have leisure, instead of putting it off till they are wanted. They should be as light as possible consistent with the requisite degree of strength.

THE FERRET—DESTROYING RATS.

THE FERRET.

We are unable fully to answer the inquiries of a correspondent, in regard to the feasibility and advantages of keeping ferrets in this country, for the purpose of destroying rats; and we should be glad to hear from any of our readers who have kept them.

The ferret is a native of Africa, and is very susceptible of cold. In Great Britain, ferrets are very common, and sell for about one dollar each. They procreate twice a year, are gravid six weeks, and bring from six to eight young. They smell fetid, especially when irritated. The young are very liable to disease, and are reared with difficulty. They are fed on milk or fresh meat. Salt meat is fatal to them. They should be kept in a warm box, and be provided with a little wool, or other warm substance, for a bed. They must be kept very clean, or they are liable to attacks of foot-rot and other diseases. The natural food of ferrets is the blood of animals; and they destroy rabbits, rats, and poultry, by sucking their blood from the back of the neck. They seldom eat any of the flesh when they can obtain a full supply of fresh blood.

In England, where rabbits are abundant, "ferreting" is a very popular sport. The rabbits make extensive burrows in the ground, like the woodchucks of this country. Nets are laid over the holes, and the ferrets, after having their *mouths sewed up*, are turned into the burrow. There is very soon a great commotion, and *presto!* a rabbit is in the net.

Owing to their moist climate, the farmers of England stack nearly all their grain, and thresh it during the winter or following summer. The stacks, when not built on capped frames, are much infested with rats, and the ferret is used for the purpose of driving them out of their holes. The sport is not unfrequently very exciting. The ferrets are not muzzled, but rarely kill the rats, for the simple reason that they can not catch them. As soon as the rats are disturbed by the ferrets, they leave the stack very precipitately, and on their exit are seized by terrier dogs, which make short work of them, or they are knocked over with sticks, or shot on the top or sides of the stack.

Ferrets have been introduced into this country; but owing to the severity of our winters, and to the fact that we seldom stack our grain, they are not as valuable as in England; still, they may be of service.

SUGGESTED ITEMS.—No. 17.

The "January instalment" of the *Farmer* for 1858 is received;—new head, new type, fine white paper, and a capital table of contents; "thirty prize essays," half a dozen editorials, eight *real* illustrations, a well-set Editor's Table, etc., etc., not forgetting the tabular report of the principal markets. I do not envy the farmer who "can't afford" *four cents a month* in return for all this.

"*Underdraining*" is indeed a worthy subject to lead off in the practical discussions of the volume. One consideration, however, might be urged in addition—the largely increased effect of manures on drained land. Most farmers have noticed the difference in the result of a dressing of manure, even upon a single field, without being able satisfactorily to account for the same. They see that the "wet places," however highly manured, always fail more or less in productiveness. The reason of this may be briefly stated as *stagnant water*—water which must pass off by evaporation instead of filtration,—in the one case leaving the manurial elements inert or floating on the surface, in the other depositing them in the soil just where they best affect the growth of the crop.

"*The Webb South-Down Sheep*" are indeed fine specimens of that noble breed; but, well as I love sheep, I can not "elevate" my ideas to the proper appreciation of the money they cost,—it looks to me like paying pretty roundly for "fancy."

"*Laborers' Cottages.—Farmers' Wives*" will gladly see this question agitated, for they can *feel* upon the subject. It touches many of them more nearly than any other "slavery" discussion yet brought before the public.

"*Farmers' Clubs*" are discussed *practically* by your Cobourg "Tenant Farmer." Let intelligent, practical men, take hold of them, and they will be carried on and kept up with the spirit necessary to their success and usefulness.

"*Our Winter Evenings*," how shall we spend them? In reading, answers J. P., of Goderich. But why confine one's self to books and "non-political, non-sectarian newspapers." Men of no party or sect are not generally the men of most commanding influence, nor of the best influence. Give me a man or paper, either, of decided opinions. I can listen to him, but I do not say I will believe him.

"*Breaking Colts.*" Yes, "B.," in training any animal one must "keep cool" himself. Kindness, patience, and firmness, will conquer; without them you only excite rebellion.

"*Sheep on the Prairies*" will not be found very generally, until a different system of fencing prevails—until "speculation" becomes a little less rampant—until prairie farmers are forced to the adoption of a "mixed husbandry," to keep up the fertility of their grain fields. *Then* they will find sheep profitable.

"*Wintering Dairy Cows*" seems well understood by Mr. Taylor. I like his plan of racks and stalls very much; but there is an evident mistake or misprint in giving the dimensions of the mangers,—should it not be *two* "feet in depth and width," instead of twelve feet? [Yes.] "Hay *is* the main thing" for feeding, *unless* one has plenty of well-cured corn stalks; then he may make them the "main thing," without injuring quality or quantity of milk, or condition of cows.

"*Pulverizing Heavy Clay Soils*" is best and most effectually done by *underdraining*. Ask JOHN JOHNSTON if this is not the case.

"*The Management of Permanent Grass Land*" ought to be studied by our farmers. *We plow too much!* By fall manuring we may keep up the productiveness of a meadow for *many* years, and the hay will continue to improve in quality. So, also, of pastures. Plaster should be used more freely. It is not right, either in morals or agriculture, to always take and never give—we must carry out "the doctrine of compensations."

"*Stone Fences*," neatly built and well kept up, give a *finished* look to the farm—a look which no other fence can give as well. Let those who have the material put them up, by all means. I have hardly stone enough to put under the corners of my fences.

"*The Cultivation of Standard Pears*" is no doubt profitable; but the buyers who will pay "from $10 to $20 per bbl." are not often found in this vicinity. We sold ours for $2.50 per bbl., and could find only one buyer at that, and he from a western city.

"*Farmers' Wives and Daughters*" are truly welcome contributors to the *Farmer*, and "M. C. L." is right in urging them to do their part in filling its pages.

"*Blight on Carrots.*" Who can tell Mr. STEELE and myself what ailed our carrots? Mine looked well until August; then the tops began to die, and the growth was stunted and imperfect. Late in the fall they seemed to start again more vigorously, but the crop must be counted a failure. Soil, sandy loam.

Niagara Co., N. Y., Jan'y, 1858.

NOTES FOR THE MONTH.—BY S. W.

THE PHILOSOPHY OF MANURES.—Although nitrogen is the most valuable component in manure and the most liable to waste when by heat and moisture it is formed into the volatile carbonate of ammonia, yet experiment proves that a soil treated with concentrated manures rich in ammonia and phosphoric acid, can not bear a continued succession of good crops without the aid of vegetable or carbonaceous matter, which not only supplies nitrogen, but potash, and keeps up that mechanical action and atmosphere of carbonic acid in the soil so necessary to a perfect vegetation.

Com. JONES, of the U. S. navy, a student of the vegetable creation and a close observer of that foreign agriculture which so often came under his notice during his official peregrinations, has told us that in Peru, where guano once produced great crops, it is now no longer used as a fertilizer. We are also told that on the light soils of Eastern Virginia and Maryland, where Peruvian guano had been used for many years with such great results that the saying became proverbial, "no guano no wheat," now even the increased application of guano to the soil there can not prevent a yearly decrease in the cereal crop. But all this experience does not invalidate the great value of guano rich in ammonia, phosphoric acid, soda, &c. It only shows that if guano and other concentrated fertilizers enable the soil to produce large crops, the effect must be that such crops exhaust the soil of its carbon and the plant-food contained in its debris, which the concentrated manure fails to supply. Hence the importance of mixing guano with swamp muck or those manures which contain vegetable matter, when it is applied to a soil in which the vegetable humus is exhausted. Had those light Virginia soils, instead of being run with wheat and manured with guano alone, been treated now and then to a green crop, of clover or buckwheat, or even winter rye, plowed in when in bloom, there can be no doubt that the next wheat crop would have been much increased by the amendment.*

THE APPLICATION OF PERUVIAN GUANO TO THE SOIL.—Our amateur farmer, JOS. WRIGHT, sowed a large heap of finely pulverized Peruvian guano on his well-prepared tobacco field, last spring. A light warm shower followed the sowing. The next day, when he went to set out the plants, he was astounded at the strong scent of the carbonate of ammonia now going off to the atmosphere. Of course, the guanoed portion of the field gave no sign afterward of extra vegetation. Mr. W. said that his head was so full of horses at that time, that he entirely forgot the directions to mix the guano with plaster or dry muck, and to harrow it under as fast as it was sown. But he is so much of a practical chemist that he has learned from his blunder to have greater faith in the fertilizing power of the guano.

SPECIAL MANURES.—Methinks it is not advisable for those farmers who are blessed with farms on the alluvial hills and dales of Western New York to pay much money for special manures. Better employ the same capital in making and saving manure on the farm, by the employment of all their straw and every other vegetable refuse in their manure laboratories, the hog-pens and the stables. Yet, on the detritus formations at the east, where swamp muck is plenty, and straw and other refuse scarce, not only Peruvian guano but made fertilizers may be employed at a profit by every farmer.—Several correspondents of the *New England Farmer* bear a somewhat astounding testimony of the virtue of Gould's muriate of lime, but in my opinion their experiments are not invalidated by the adverse testimony of D. W. LATHROP, who avers that his Marrowfat peas treated with Gould's muriate failed to grow over a foot high; his soil was certainly too far gone up to be helped by a single application of a concentrated manure. But that which is still more astonishing, is the fact that his experiment was made in his garden. Who ever heard of a garden that would not grow bush peas a foot high, even without manure?†

PRIVET HEDGE.—In snowy New Hampshire, the privet hedge, it is said, makes a beautiful fence at a

* Peas are often used for this purpose in Virginia, and with excellent results. EDS.

† According to the analysis of Prof. S. W. JOHNSON, Gould's Muriate of Lime is "inferior to leached ashes." It is an easy matter to get any quantity of testimonials to the value of the most worthless manure. Farmers do not know how to experiment with manures. Some of the best practical farmers of England gave their testimony in favor of the so-called "Economical Manure," and yet analysis declared it comparatively worthless, and the general verdict of farmers subsequently agreed with the chemist. We apprehend it will be so with the Muriate of Lime. We regard it as a well-established fact that a good chemical analysis will determine the value of a manure with unerring certainty. EDS.

very small cost. It is doubtless protected from freezing to death in winter by a covering of snow. At Newport, R. I., great pains have been taken to grow privet hedges, but the frosts of winter have invariably proved fatal to them.

Cooking Food for Animals.—In France, horses are in some locations fed on baked loaves of coarse bread, at a saving, it is said, of half the meal. In Kentucky, S. H. Clay, of Bourbon county, ascertained, by very careful experiments, that pork made by feeding raw corn at fifty-six cents per bushel, cost nine cents per pound; fed on boiled corn, it cost four cents per pound; and on cooked Indian meal, three cents per pound.

The largest Hog of his Age.—Geo. R. Babbitt, of this town, killed a hog this week, sixteen months old, that weighed 740 pounds alive, and 642 pounds when dressed. When seven months old, it weighed but 200 pounds, gaining 540 pounds since 1st of April. It was fed on raw Indian meal and house swill, including sour milk, and had the run of the barn-yard, with all the new corn meal it would eat since 1st October. Mr. Babbitt is one of those farmers who buy lean cattle and store sheep, and sell them fat, as the means of enriching their land, while it puts money in their pockets.

Diminution in the Growth of Potatoes.—From Chautauque to Oneida county, in this State, the potato yield, even when free from rot, is not one-fourth as large as it was formerly. A farmer from Chautauque says he used to get a peck from a hill; now it takes six hills to the peck. Many farmers in this region make the same statement, although more pains are taken to make the crop now than formerly. Per contra, in Ohio and Northern Indiana, the yield was never larger, although they are somewhat troubled with the rot where stable manure is applied as a fertilizer. Joseph Mosher, of Mt. Gilead, Morrow Co., Ohio, writes to the *Ohio Cultivator* that his neighbor planted two Mexican potatoes last spring, which yielded a bushel. That same variety of potatoes here, on the best soils, does not yield fifty bushels to the acre.

Waterloo, N. Y., Jan'y 8, 1858.

Variety of Farm Products.—A celebrated French agriculturist, Gasparin, speaking of the advantages of cultivating a variety of farm products, eloquently says: "We will write upon our flag, *Variety!* That 's my device. That rapid locomotion which explores the world, which interrogates all climates—that spirit of investigation which is the characteristic of our age—all will concur in concentrating upon our old soil the young productions snatched from rich countries, and which we shall find means to naturalize. The most humble table shall be covered with new gifts: like that of the rich, it shall enjoy a diversity of food, which is the pledge of health, strength, and contentment. Uniformity, whatever may be the scale that we assign to it, is the worst of conditions: it is the spleen of the North; it is the misery of Ireland; it is the rule and the chastisement of convents, the homesickness of the barracks."

Cure for Cholic in Horses.—Take one pint of pure fish brine, and drench the horse with it, and in a short time he will be better. J. C. Curry.—*Wells County, Ind.*

SHEEP AND SHEEP-TICKS.

Editors Genesee Farmer:—Whenever I read articles telling how to destroy ticks on sheep, (see *Genesee Farmer* for January, 1858, p. 13,) "it kinder raises my dander," as Sam Slick would say. For some thirty years, I have been using a preventive worth a thousand cures, because neither sheep nor anything else of animal kind can be kept profitably without the use of my preventive for ticks, which is simply to feed sheep and all other animals so as to keep them improving and growing all the year round; and if a farmer is paid for keeping stock in any other manner, it is only by chance. If farmers will feed from eight to twelve ounces of grain a day, to each sheep, through the winter and spring, with good straw for fodder until about the 1st of March, and then give them hay until there is grass enough for them, and give them shelter in the yard during winter, I will guarantee that they will be free from ticks in the spring, or nearly so, unless there are some so very old that they can not be kept in condition, or some diseased ones. But sheep with lung or liver diseases seldom or I think *never* propagate ticks; it is healthy sheep, suddenly reduced in flesh by poor feed or other privations—such as exposure to great cold, or wet, dirty yards, where they become exhausted by standing and leaning against the fence, for neither sheep nor cattle will lie down in wet dirt so long as they are able to stand up—that are infested with ticks.

I know there are farmers who say that feeding such lots of corn and oil-cake as I do may pay me, but would not pay them. But their reasoning is absurd; and they would be convinced if they could only be persuaded to try, if it were only ten or twenty good sheep, or even lambs in good condition. As soon as pasture fails, commence giving them a little grain—oats are best to learn them to eat—and gradually increase their feed until you give them each eight to sixteen ounces of grain or oil-cake meal per day (I prefer the latter); and I will warrant that they will pay amply for their feed; and the longer they are kept, the better they will pay. They will almost if not quite pay in excess of wool; they will again almost pay in excess of mutton; and if they are ewes with lamb, they will nearly pay in excess of lambs raised; and if the lambs are for the butcher, their extra quality will again pay for the mother's grain or oil-meal during the preceding winter and spring; and if they are young sheep for feeding another winter, with fair pasture they will be very fat in the fall, and a half-bushel of grain will do more in putting on fat than a bushel would the first winter.

No man knows what advantage it is to feed both cattle and sheep even a little grain or oil-cake but he who has tried it. The winter before they are intended for the butcher, they fat a half better than the first winter. For instance: I bought a lot of lean lambs and yearlings in the last of November, 1856—the lambs averaging 55 lbs., the yearlings 76 lbs. They were all thin in flesh, but of a pretty large breed. I commenced feeding them oil-meal at once, with good oat and barley straw, and increased their oil-meal to 12 ounces each per day, at which rate I continued until grass came. I fed no hay. (Lambs do not require so much as old sheep; I usually feed a pound each with straw to older sheep, or half a pound with good hay.) They were

then turned to grass; and in two weeks after, I began retailing the best of the two-year-olds to the butchers in the neighboring villages, at from $7.25 to $8 each; and in that way I sold all the two-year-olds but four, which, with the yearlings, I have still. I weighed them some three months ago, after shutting them up fourteen hours without food or water, and they averaged over 132½ lbs. I have no doubt but they now average over 140 lbs. I am feeding nearly half a pound of oil-cake meal and nearly half a pound of oats each per day.

Now, any man of common capacity can see at once that the better they are fed the better they pay. I paid only $2 each for them, and thought them a hard bargain at that, as there were one-third more lambs than yearlings. They sheared nearly five pounds of wool each; and had they been in good condition in the fall, I have no doubt they would have shorn one to two pounds more each. I offered to pay the shearers by the number of ticks they might find—that is, to give six cents for each tick, as compensation for shearing; but there were no ticks found.

Now, Messrs. Editors, if farmers will keep sheep to propagate ticks, I am not to blame, for, several times I have given just such advice through the agricultural papers.

In conclusion, I would add, that high feeding, high manuring, and reasonably deep tillage, are the only means of improving the wretchedly-abused soil of Western New York; and sooner or later it must be done, or the result will be disastrous; and it must begin with high feeding. I have all my farm drained, of course. I had nearly lost sight of that very important part, which, if not already begun, should commence at the same time as high feeding. I can not believe that any farmer can begin either and look back until he has done all he can do. I write what I know I have fully proved, and I know it is the only true course for the farmer's own good, as well as that of his country.

Near Geneva, Jan'y, 1858. JOHN JOHNSTON.

"NOTIONS" ON FODDERING STOCK.

My part of the "chores," this winter, is to do the "out-door foddering"—to attend to the wants of the sheep and cows kept in the barn-yard. I have forty sheep and thirty lambs, five cows and two yearling heifers, to care for, and, I tell you, it takes some "calculation" as well as attention to keep them all *contented*. I say contented, for I hold *contentment* to be the "millenial state" of all domestic animals. Contented they will be, if they have food when hungry, drink when dry, quiet when disposed to be meditative, a warm shed and good bed to retire to at pleasure. I don't say I always succeed in attaining this "acme of comfort," but it is what I "aim at."

The sheep have a shed and yard by themselves; the lambs ditto. The cows also have sheds, and the remainder of the yard. I think it would be a good plan to give the yearlings—"Cherry" and "Beulah 2d"—a yard and shed by themselves, so that they need never stand in awe of their maternal parents, who punish all impertinence severely. My watering place is a pond about five rods outside the yard, and is kept open through the day.

Now-a-days, I am feeding corn-stalks, oat straw and chaff, and bean straw. After daylight, I give my cattle a feeding of corn-stalks, and sometimes let out the sheep to partake of the same. I give the lambs a feeding of bean straw at this time. I say, "sometimes let out the sheep." Not unless the yard is frozen dry, do I do this; and on the state of the yard, also, depends the amount of stalks given out at once. If wet, I only give half as much, and feed again the middle of the forenoon. About this time, I give the sheep a quantity of oat chaff in their feeding boxes, and shut them into their yard. I now let out the lambs, to allow them to get water, and feed from the straw stacks, through the middle of the day.

At noon, I feed "all around," with oat straw. The middle of the afternoon, slop the milch cows, shut the lambs into their yard, and open that of the sheep, giving, if previous foddering is eaten up pretty clean, a promise of early foddering before sundown. Then the lambs have oat chaff, the sheep bean straw, and the cows corn-stalks once more. If the weather is wet, and the stock seem to have poor appetites, I give at night a foddering of good hay; or, if more convenient, do so at noon.

—Now let me tell my troubles; perhaps some of your correspondents can give me a remedy.—There will come snowing and thawing days, when everything is wet, and barn-yards and sheds generally muddy, however well they may be littered. I never had a rack or feeding-box which would keep corn-stalks from getting under the feet of cows in such weather. I never had stock that would eat their fodder as clean on such days as in clear cold weather; so I then give them a little of my best hay, once a day, a few corn-stalks, and let them fill up at the straw stacks, if more is wanted. My sheep have racks under sheds; so I get along rather better with them. J. H. B.

AGRICULTURE IN THE WEST.

EDITORS GENESEE FARMER:—The system of farming here in the West has hitherto been an exhausting one, as though the fertility of the soil would last for ever. It is high time this was changed, and a judicious course of cropping practiced, with renovating ones for the land. No doubt your eastern farmers are alive to this, and have probably ere now received instructions and advice through your excellent publication. I may hint to you that a good thing can not often be spoken of too much, and that farmers, like boys, need repetition upon repetition. An article now and then, upon the improvement and renovation of soils, will be interesting and beneficial. In Europe, the effects of bare fallows on clay soils are well known. Here, on sandy and black mold, it seems inapplicable, and that a crop of green manure plowed under is perhaps better adapted. I would like to see this subject treated on by some of your able correspondents. EDW. BILLINGSLEY.

Zanesville, Montgomery Co., Ill.

FATTENING CATTLE IN WINTER.—I have fattened a number of cattle by giving them three pecks of potatoes per day, with hay and no water. This will make good juicy beef. When potatoes are plenty, this is a cheap way to fatten cattle. Feed small potatoes whole. SILAS BUSH.—*Skaneateles Onondaga Co., N. Y.*

STALLS FOR COWS.

EDITORS GENESEE FARMER:—In the January number of your journal is an article on "Keeping Dairy Cows through the Winter," contributed by A. J. TAYLOR, of Java, N. Y., containing a description of cow-stalls, which are so near the best that I have seen that I am tempted to describe a kind which I think a trifle better. I hope that Mr. TAYLOR will alter his stalls, and give his opinion, which, I have no doubt, will be as warm in favor of the "Ayrshire stall" as the inventor could wish. I was induced to build some by an article I saw in the *New England Farmer* at the time I was altering my barn. The substance of the article is as follows: Mr. Jos. M. DRIVER relates that he was obliged to tie a cow in a horse-stall for a few days, while altering his barn, and in consequence of the hints she gave, he got up the "Ayrshire stall," which he considers nearly perfect; and his neighbors coincide with him, after years of trial. The description will be more readily understood if you imagine a horse-stall before you. Now, then, as a cow has not the long and arching neck of a horse, the front plank of the manger must be very narrow, and rise only about two inches above the bottom of the manger, said bottom being three feet or less above the floor. This height of two inches is sufficient to prevent chopped roots from rolling out and falling to the floor.* The short neck and broad nose of a cow prevent her from conveniently using the horse's rack; therefore you will bring the lower ends of the rack bars toward the cow, and insert them into holes bored in the front edge of the bottom plank of the manger. Thereby they become upright, not slanting: hence the back part of the rack should be sloping, in order to slide forward the hay as fast as eaten. Also, take out every alternate bar, as cows require from six to eight inches between the bars. Do not make the manger too broad; a 12-inch plank is full wide for it.—Make the stalls about three feet wide, and shorten the partitions to three feet in length from the manger. Of course, the partitions run likewise across the manger, so that the cows shall not see each other while feeding, nor each other's mess. Put a strap around your cow's neck, having a halter chain attached; lead her to the well-filled rack; put the chain through a hole you have bored in the center of the manger, near the front edge; tie her rather short, so that her nose will nearly touch the manger when she stands; and *both of you* will be delighted! The floor should be cut off close to her heels, so that her dung and water shall fall into the channel, or on the barn floor, three or more inches below the stall floor, and she will be as clean as a new penny all winter.

The great advantage is this: When the cow stands, she is as far out of the stall as her chain allows; but when she lies down, she must step forward and put her head under the manger: hence she can not lie down in her dung. The method of securing cows by upright stakes, or "stanchions," as we call them, is a cruelty which should be forbidden by law.

Dedham, Mass., Jan'y, 1858. M. B. I.

* Mixed feed composed in part of meal. I prefer to feed to the cow in a box thrust under the manger; not from any defect in the arrangement of the manger, but because boxes can be more easily and thoroughly cleaned immediately after the cows have eaten; consequently, rats and mice are scarce on my premises.

WHO HAS THE OLDEST HORSE?

EDS. GENESEE FARMER:—Which is the oldest horse, and how long with suitable care and attention can the horse be kept to be of service to man, are questions that we often hear; and while the writer of this may not be prepared to answer both questions, he has undertaken to write a little history of a *pretty* old horse owned in the goodly town of Oxford, N. Y.

Some twenty-five years since, a certain Baptist Minister brought to this town from Canada a span of black Indian ponies, as they were called, where they were taken wild a long time ago, by a man who has lately visited the neighborhood where one of them is now owned. He is a gentleman of the strictest veracity, and avers that as long as *forty-one* years ago this truly long-lived horse was taken wild, somewhere in Canada, when he was a *full grown* horse, where, with his mate, taken at the same time, he was owned and subjected to hard labor all over the Canadas, up to the time when they were brought to this country and tried a little in several of the States and Territories, and then traded off by the aforesaid Baptist Minister (for even Ministers traded horses in those days) to a Baptist Deacon, a neighbor of mine, who kept them a few years,—say ten or fifteen years—during which time they were allowed, for pasture, to do most of the hard work in the neighborhood during the week, and then to draw all hands up to meeting, four miles, on the Sabbath, and then again were good for all of the evening meetings, singing schools, &c., at the same time; when they were again traded off to a man back in the woods, who was just beginning a little clearing over there, full six or seven miles from the village of Oxford, up to which place, besides helping slick up the farm, they were driven—not only with big loads on the Sabbath, but almost every day in the week,—forward of an extra strong and heavy carriage, that used to carry all hands safe and sound. Finally one of these justly celebrated horses "kinder gin out," over there, and while the writer is unable to give the precise time when this event occurred, it is still known to have taken place some time during the first half of the present century! At any rate, I well remember the time, for as soon as it did occur a pair of thills were fitted into the old carriage, which was extra strong and heavy, and the hero of this short history was for a few years allowed a little respite from work on the farm and just trotted up to town rather oftener than ever, though in truth since the "going" has got to be uncommonly bad even for this country, and the old horse *does begin* to look a little *oldish*, he has been allowed to "lay by" for a while in order to recruit up again.

How long, with suitable care and attention, will the horse survive and be of service to man? The one whose life is written above is known to have been taken in a wild state more than forty years ago, at the time a full grown horse—at what age it is not known, as no record of the years of his colthood has ever been found, and tradition, alas! is silent upon the subject. E. A. B.

Oxford, Chenango Co., N. Y., 1858.

WAS it ever known that a rural residence, tastefully planned and appropriately adorned, was not the abode of refinement and intelligence.

MUCK APPLIED UNMIXED TO THE SOIL.

EDITORS GENESEE FARMER:—Among the subjects on which you offer premiums for short essays, you call for one "detailing experiments in the use of muck applied unmixed to the soil." I have seen nothing as yet in reply, and have been deterred from offering my own experience in the matter from the fact that I used too little pains to test the exact benefit derived. But you must judge whether the following is worthy of print.

In the spring of 1855, I came into possession of part of a farm—a lot of twenty-two acres—a narrow strip some twenty-three rods wide—three acres of loam on one end, then ten or twelve acres of marsh, the remainder heavy clay. The loam had been pretty hard run, and was partly plowed up in the fall before my purchase. Barn-yard manure was not to be had, so I concluded to try muck upon the loam, in connection with leached ashes. The spring was late and very wet, but we dressed one-half the lot with muck from the marsh, about thirty loads to the acre. On this was spread leached ashes at the rate of fifteen bushels per acre. The whole field was then plowed, and planted to corn.

The corn crop was of just about double value on the part to which the muck was applied. That was in considerable degree due to the muck, I am well satisfied; but I have often wished I had left some part without ashes, and taken pains to determine the exact difference.

The next spring we dressed the remaining acre and a half with muck, about twenty loads per acre, being in a hurry to plow for barley. Over this we spread twenty bushels of unleached ashes—giving bushels where we gave loads before. The barley was sown too late to do well, from the fact that dry weather came on soon after it came up, with but very little rain until it ripened. The crop was much the same over the whole field; and it was observed in plowing, that the soil was much mellower where the muck had been applied.

The past year, having been seeded to clover, it gave a fair crop of hay. I consider the muck to have been of considerable value, and have since applied it in other cases where I have been interested, with equally favorable results.

I hope those of your readers who have made use of muck as a manure, either composted or unmixed, will give us the results of their experience. B. F.

ARTESIAN WELLS.—Some of your western correspondents can no doubt furnish the information desired by Mr. GARNSEY, as Artesian wells are becoming quite common in that section. The name is derived from Artois, a city in France, where the system of boring for water was first successfully adopted. Many of the salt springs in this and other States have been reached by Artesian wells; and all deep wells which must penetrate rocky strata, can be excavated most cheaply by this method. J. H. B.—*Royalton, N. Y.*

RECEIPT FOR FOUNDER IN HORSES.—Take ¼ lb. alum, dissolve it in hot water, let it cool, then pour it down the horse. Don't be afraid; it will cure. If the horse is stiff, put his feet in hot water, one at a time. I have saved several horses in this way. A. B. C.—*Crystal Lake, McHenry Co., Ill.*

REFUSE LEATHER FOR MANURE.

"TELL us how to convert old leather into manure," says "G. C. L.," of Lynn, Pa. "It is rich in ammonia; but how can that be made available?"

Leather consists of organized fibrous gelatine, combined with tannin, and probably also some vegetable extract. Applied as manure, the gelatine and coagulated albumen it contains, are converted, by gradual decomposition in moist earth, into ammonia, which, together with other ingredients, is of high nutritive value to vegetable growth.

BROWNE, in his *Field Book of Manures*, says "the most economical method of using old and refuse leather, is to chop it into small pieces, and scatter uniformly over the ground, at the rate of twenty to thirty bushels per acre, and plow it in. Kept constantly covered with moist earth, this dressing continues to impart a fertilizing influence for six or seven years. If desirable to expend its virtue at once, the leather may be dissolved in strong solutions of potash or sulphuric acid, and administered in the form of liquid manure?"

It is stated on competent authority, that old leather will readily decompose if placed first where it absorbs urine, as under the barn-sheds which shelter sheep or cows, or in a heap of fresh horse manure. After it becomes thoroughly saturated with urine, throw it into a compost heap to ferment, and its decomposition will soon take place. Hair will soon decompose if treated in the same way. It has been our practice to throw the hair left after butchering hogs into the barn-yard, and we have always found it almost entirely decomposed by spring.

Manures of this character are said, by BROWNE, to be "applicable to nearly every variety of soil, but appear to be best adapted to those that are sandy, gravelly, or light." Probably the difference in effect observed, is occasioned by defective drainage, as it is well known that the best manures can not act with much force in a wet and heavy soil.

January, 1858. J. H. B.

ANALYSES OF SOILS.

EDS. GENESEE FARMER:—Not being a practical chemist, perhaps I should not speak upon this subject. But I understand the views of farmers upon it; and though they may be in error, yet I must believe that soil-analyses, in discovering what manures are necessary upon certain soils, are of very little practical benefit. No farmer with his eyes open cultivates his farm for many years without a more thorough and useful analysis of his soil by cropping it than he could make with the crucible. The fact is, none but alluvial soils are uniform enough to give even a guess at their value throughout a field by analysis. The crop grown by the farmer is his best and most reliable analysis of the soil. If the berry is heavy and abundant, he knows that the soil is filled with the proper constituent elements. If the straw is very large, and the grain light in weight and yield, he knows that the soil is better adapted to grass than grain, without a learned Professor to stand at his elbow and announce the fact for a given sum of money. The farmer also holds to the opinion that costly manures frequently specified by analysts as wanting, can not be *profitably* added. The farmer, as well as the chemist, works for pay. JNO. SANFIELD.

Out West, December, 1857.

CHINESE SUGAR CANE IN IOWA.

Eds. Genesee Farmer:—According to promise, I will give you some account of our Sorgho operations, though so many have raised, experimented and written upon it that I fear I shall have nothing new to add. The 18th of May my husband planted two-thirds of an acre, but owing to the coldness of the season, many of the seeds failed to come up, so that when cut it was estimated at about one-third of an acre, which yielded 10,560 canes; only 500 of these were fully ripe, which were reserved to test the difference between ripe and unripe cane for yield and quality of syrup. My husband being a mechanic as well as farmer, built himself a mill, somewhat after the fashion of a cider press, only with three upright rollers instead of two, going by horse power. He also made a sheet iron pan with wooden sides and a heater, with a brick arch to boil upon; he boiled in the pans till it was about half reduced, adding cream of lime, and white of eggs to clarify, when it was taken off and strained. It was then brought into the house for the *women folks* to finish off in a large brass kettle, adding a little skimmed milk. We found the yield of unripe cane to be one gallon of syrup to ten of juice; the 500 reserved canes were then pressed and yielded forty-five gallons, which, when boiled, made seven gallons of syrup, of a much finer quality than the first, showing conclusively that the canes must be ripe to make the most and best molasses. The 10,560 canes made eighty-six gallons of syrup, all of which was better than any common molasses, and the best as nice as Belchers syrup. Owing to the rollers being of wood instead of iron, we did not get the whole of the saccharine matter—probably not much more than two-thirds—as wooden rollers give so much more than iron, and the last of the juice is richer than the first. I find the syrup, when half boiled to the consistency of molasses, to be an excellent substitute for cider in making pumpkin and apple butter; but to make wild plum and tomato butter, or marmalade, (which articles are very popular here at the west,) it requires the whole strength. Pumpkin butter is much improved by adding a little vinegar while cooking, which gives it a tart taste, much resembling apple. I think, after this, farmers may snap their fingers at hard times as far as *sweetening* is concerned for they may be perfectly independent. VIOLA.

Clay, Washington Co., Iowa, Nov. 24, 1857.

Oxen vs. Horses.—Oxen cost far less and can be kept cheaper than horses; the wear and tear of the yoke and chain is less than that of a set of harness; and if an accident, such as breaking a leg, should happen to one, he is not a dead loss—for, if kept as he should be, and as any farmer will find it to his interest to keep his cattle, he will make beef, while a horse in like circumstances would be a dead loss. Myron E. Tanner.—*Clarkstown, Rockland Co., N. Y.*

Buckwheat for a Sod Crop on the Prairie.—Hitherto it has been thought that only corn could be grown on prairie sod the same year it is broken up; but, upon trial, buckwheat proves more certain and valuable. It keeps down the weeds which spring up on land not thoroughly shaded, and proves a more remunerating crop. G.—*Plain Farm, Ill.*

SOW A VARIETY OF GRASS SEEDS.

Editors Genesee Farmer:—I am satisfied that every farmer should cultivate some of the different kinds of grasses best adapted to his soil, not only as a reclaimer of worn out and exhausted lands, but because it is cheaper food than grain, for all kinds of stock except hogs. Some of our best farmers who have their farms well stocked with grass, have a supply for their stock eight or nine months in the year; whereas, some of us who have less grass are under the necessity of feeding six or seven months in the year. Now this is quite a difference in favor of those who cultivate a greater proportion of grass. In the first place, they are enabled to manage their lands with much less labor, and at the same time greatly improve their quality, which should be the great object of every one who is the owner of the soil he cultivates. I frequently talk with farmers who admit that their land would be as profitable if well set in grass as when cultivated in grain crops, yet they do not adopt the practice. And why? Simply because it requires a little "ready money" paid out for grass seed, on which they can not immediately realize a profit.

Every farmer should endeavor to raise his own grass seed, if possible; or enough and to spare of some particular kind, to buy such as he does not make.

I am in favor of sowing different kinds of grass seed on the same land, and at some future time may give you my method of seeding to grass.

Oldham Co., Ky. W. B.

NOTES FROM MINNESOTA.

Eds. Genesee Farmer:—We are upon the verge of winter, and I will tell you briefly of our harvest, our fall weather, &c.

Everything that we cultivated was good, except corn, which was lated and injured by the frost, which came earlier than usual this season. We had a slight frost on the night of Sept. 19. My Dutton corn was in the shock a week before that. But little injury was done by it. Our first severe frost came on the night of October 15th. It injured much of the Dent corn. We soon after had frosts which injured the undug potatoes. On the 8th November, snow fell about one foot in depth. Sleighing came unexpectedly, and found us unprepared for it,—our stables were not in readiness, our small grains were ungarnered and our corn unharvested. Since the 8th we have had *severe* cold weather and good sleighing until within a day or so, and now the ground is nearly bare.

The *hard times* are keenly felt here. Money is scarce. Produce brings but a small price, and almost every one has debts to pay. We have plenty of wheat to supply the demand. Corn, oats, and hay will probably be scarce next spring. Pork is scarce and dear; beef plenty and cheap.

Farmers looked somewhat discouraged at the early advent of cold weather, but they have since gathered their corn and made the necessary preparations for a Minnesota winter. E. Hodges.

Marion, Olmsted Co., M. T., Nov. 30, 1857.

Since the above was put in type, we have received another letter from Mr. H., stating that the weather has been exceedingly mild in Minnesota—more so than he ever remembers in Western N. Y. Eds.

ABOUT WINTER BUTTER.

"SMALL profit in trying to make butter at this season," said Uncle JOE, as he paused from his churning and wiped the sweat from his forehead; "here it is, nine o'clock; this churn has been going full three hours, and no signs of butter yet."

It surely was a hard case. I pitied uncle, but said nothing, for I *knew* nothing very pertinent to the occasion.

But "Rome was not built in a day." "We live and learn;" and now—two years later—I sit down, having churned a respectable churning while wife was getting tea, and had time to spare to play with "baby." Experience has taught me several things since the day Uncle JOE questioned the profit of making butter in winter (mind, I don't say it *is* profitable.)

Hold! I must study brevity. "Be short," should be the motto of every one who writes for "the papers," and particularly for "our paper," the *Farmer*.

Last winter, I had a day's job at churning; and I found out what the great trouble was—*the cream was too cold*. Since that, when I have anything to do with churning, I try to have the cream *just warm enough*. Then the butter comes in from fifteen to twenty minutes; or at most, thirty or forty.

There are various methods of warming cream. A good way is to set the cream-pot in a warm room, and stir it occasionally. Or, in a vessel of warm water; or near a fire, turning and stirring frequently. Don't *melt the cream;* if you do, it will never make butter. Sometimes, finding, after churning a while, that the cream is too cold, I set the churn near the fire, leaving it for a time; or, if in a hurry, and rather lazy withal, pour hot water into the churn, keeping the dash going all the while, so that none of the cream gets scalded.

When the cream "froths up," as you churn, you may generally be sure it is too cold. You may churn, if you like; but "the mischief is in it," and the butter will refuse to appear until it is warmed. Possibly you may warm it by churning; but it is a great saving of patience, time, and "elbow-grease," to warm it some other way.

In the day's churning mentioned above, the cream "frothed up" badly. We set the churn in a tub of hot water, finally; but had to get the cream much warmer than when it is "just right" at first. The butter-milk fairly smoked, as the churn was opened to take out the butter, and was blood-warm, if not more.

That was the only time I ever used a thermometer to measure the temperature in churning. "According to the books," it was too warm all the while. We tried putting in snow to cool it. But it was really *too cold*,—and I think one's finger the best thermometer. Have the cream so it feels just *a little warm to the finger*, and it is right.

If one has good cream in winter, they can make good butter. To get the first, one must have good, well-fed, and *comfortable* cows; an even temperature to raise the cream; and churn often, before it gets bitter and sour. But I will not expatiate on this branch of the subject.

—One word more. Butter can be colored without injury to the flavor, by putting carrot juice into the cream when churning. Grate the carrot, soak in milk, and squeeze the juice through a cloth into the churn. But, I don't mind saying it, "summer butter" suits me the best for my table, and I am willing to let the city folks have what "winter butter" I make, as the grocerymen will generally pay just as much for it.

A YOUNG FARMER.

ANTI-CHESS.—AN OFFER.

EDITORS GENESEE FARMER:—As there are still, in this nineteenth century, some who entertain the idea that wheat will turn to chess or cheat, for such I will suggest an infallible remedy, and will give $10 per quart for all the cheat they can (after using my remedy) produce from wheat.

Some years ago, my wheat was badly *turned* to cheat and cockle. As I had just as much faith in wheat turning to one as the other, I resolved to sow no more seed of either. I took the seive of an old fan, put a rim around it, sat down by my heap of seed wheat, cheat, and cockle, and sifted it so long as any cheat, cockle, or small grains of wheat, would go through, and sowed what would not go through. The result was, a very few stalks of either cockle or cheat were to be found in the forty-five acres of wheat at the next harvest; and I am satisfied that what there was came from the manure. The next fall, I treated my seed in the same way; and in the following spring, in sowing the grass seed over fifty acres of wheat, I saw but one stalk of cockle, which I destroyed. In gathering the wheat the following harvest, not a stalk of cockle nor a handful of cheat was found in the whole crop, notwithstanding it had been badly winter-killed, and a field near the barn much run over, tramped, and eaten by lambs and fowls.

To let persons know where to find me, when they have that quart of cheat ready, I will give my address.

THOS. WOOD.

Penningtonville, Chester Co., Pa.

WHEAT TURNING TO CHESS—ONCE MORE.

EDS. GENESEE FARMER:—About one mile from where I now write, (Bronte, township of Trafalgar, C. W.,) on the farm of CHARLES SOVEREIGN, Esq., a field of wheat was sown, after careful summer-fallowing, on high, dry, and sandy soil, in good seeding time in the fall. In the following spring, the wheat was very clean from foul weeds, promising a fine crop, and at maturity proved itself to be such. By chance, a board was blown into the field, and lodged upon the wheat; and after lying there several days, it was observed and removed. When the crop was ready for the sickle, the portion where the board lay was every spear of it chess—there was not even one spear of wheat,—and the balance of the crop was very good, and had but very little chess or foul weeds of any kind.

Now, sirs, was this any evidence that wheat turns to chess, or was it not? I think it is sufficient to satisfy any reasonable mind on the subject.

Bronte, C. W., Jan'y, 1858. A. B. S.

SEEDING TO TIMOTHY GRASS.—The experience of B. of Royalton, N. Y., agrees with mine, except that the heaviest crop of Timothy I ever raised was on low bottom land seeded the previous August, before a heavy storm, without dragging. THOMAS S. BLACKBURN.—*Pine Bluff, Dane Co., Wis.*

THE WILD PIGEON.

EVERY ONE who has had any acquaintance with the *Passenger*, or *Wild Pigeon*, as he is universally called in this country, will readily admit that he is an exceedingly interesting bird. His extraordinary powers of flight are almost incredible. And it is well that their power of wing is so great; for were the enormous flocks to be confined to one place, they would devour the whole of the grain. They have been killed in this State with Carolina rice still in their crops. As their digestion is remarkably rapid, these birds must have flown between three and four hundred miles in six hours, giving an average speed of a mile a minute.

The Wild Pigeon breeds in this State, where it is found at almost all seasons of the year. In certain years they make their appearance in almost incredible numbers, literally darkening the air, and breaking down trees with their weight. The stories that are told respecting the extent of these flocks, could not be credited, did they not come from such men as WILSON, AUDUBON, and others. The late DE WITT CLINTON remarks, in a letter to Dr. FRANCIS, that "in February, 1742, when the Hudson was frozen solid at New York, and the snow a foot deep, flocks of these birds appeared in greater numbers than were ever known before." Large flocks were also observed about Albany, and in the northern parts of the State, during the winter of 1819.

At the breeding season, the overwhelming multitudes of pigeons that settle on one spot almost exceed belief. WILSON, who was present at one of these breeding places, gives the following account: "Not far from Shelbyville, Kentucky, there was one of these breeding places, which stretched through the woods in nearly a north and south direction, was several miles in breadth, and was said to be upward of forty miles in extent! In this tract almost every tree was furnished with nests, wherever the branches could accommodate them. The pigeons made their first appearance there about the 10th of April, and left it altogether, with their young, before the 25th of May. As soon as the young were fully grown, and before they left the nests, numerous parties of the inhabitants, from all parts of the adjacent country, came with wagons, axes, beds, cooking utensils, many of them accompanied by the greater part of their families, and encamped for several days at this immense nursery. Several of them informed me that the noise in the woods was so great as to terrify their horses, and that it was difficult for one person to hear another speak without bawling in his ear. The ground was strewed with broken limbs of trees, eggs, and young squab pigeons, which had been precipitated from above, and on which herds of hogs were fattening. Hawks, buzzards, and eagles, were sailing about in great numbers, and seizing the squabs from their nests at pleasure; while from twenty feet upward to the tops of the trees, the view through the woods presented a perpetual tumult of crowding and fluttering multitudes of pigeons, their wings roaring like thunder, mingled with the crash of falling timber—for now the axe-men were at work cutting down those trees that seemed to be the most crowded with nests, and contrived to fell them in such a manner that in their descent they might bring down several others, by which means the falling of one large tree sometimes produced two hundred squabs little inferior in size to the old ones, and almost one mass of fat.

"All accounts agree in stating that each nest contains only one young squab. These are so extremely fat that the Indians and many of the whites are accustomed to melt down the fat for domestic purposes, as a substitute for butter and lard."

AUDUBON gives quite an astonishing account of the flight of the Wild Pigeon. He says: "In the autumn of 1813, I left my home on the banks of the Ohio, on my way to Louisville. In passing over the barrens, I observed the pigeons passing from the northeast to the southwest, in greater numbers than I thought I had ever seen them before. I traveled on, and still met more the further I proceeded. The air was literally filled with them. The light of the sun at noon-day was obscured, as if by an eclipse. Before sunset, I reached Louisville, distant from the place where I first observed them about fifty-five miles. The pigeons were still passing in undiminished numbers, and continued to do so for three days in succession. The people were all in arms. The banks of the Ohio were crowded with men and boys continually shooting at the pigeons, which flew lower as they passed the river. Multitudes were thus destroyed. For a week or more, the principal food of the population was that of pigeons."

In estimating the number of those mighty flocks, and the food consumed by them daily, Mr. AUDUBON says: "Let us take a column of one mile in breadth, which is far below the average size, and suppose it passing over us at the rate of one mile per minute. This will give us an oblong square of one hundred and eighty miles in length by one mile in breadth; and, allowing two pigeons to a square yard, we have one billion, one hundred and fifteen millions, and one hundred and thirty-six thousand pigeons in one flock; and as every pigeon consumes at least half a pint a day, the quantity required to feed such a flock must be eight millions seven hundred and twelve thousand bushels per day!"

These are tough stories, indeed; there 's no disputing that. But when such witnesses as WILSON and AUDUBON are brought upon the stand, we can hardly help believing that the stories must have a pretty broad foundation, to say the least.

A Mr. CLARK, of Albany, a few years ago, succeeded in raising the Wild Pigeon in confinement; and from his successful experiment we learn that it lays two eggs, and sets fifteen days. In eight days after being hatched, they are completely feathered, and fly from the nests. They have three or four broods between May and September. The same success has attended Lord STANLEY in England, upon a number sent out to him from this country. It is very desirable to reclaim and domesticate this very prolific and hardy species, although its extremely erratic disposition will probably render this difficult. Its food consists of beech-nuts, acorns, berries, wheat, rice, and so forth. It ranges throughout this country, from 25° to 62° north latitude.

Springside, Dec., 1857. C. N. BEMENT.

THE GENESEE FARMER, AND AGRICULTURAL LITERATURE.

YESTERDAY we received our bound volume of this paper, which for the last seventeen years we have scarcely missed from our table. During our association together, it has never once led us into bad company; and we have many a beautiful model of growing tree, plant, and flower, stored from its well-freighted pages. When it first came into our possession, we were but a boy, and looked upon its illustrations wonderingly, never dreaming that they were real representations of farm animals. But we were not content to look at the pictures; we began to read, and were soon interested, as every child almost will be, with the descriptions of the higher attainments possible to the farmer. We read, and continued to read. Our mind was improved, our heart enlarged, and thought quickened; and we have continued to read ever since. We have read of our occupation; and we do not know *why* the literature now patronized by the farmer is not as well calculated to cultivate and develop the mind, and strengthen it, as the study of any other product of the pen, or of politics, or medicine, or law. The study of his profession by the farmer, with its practical illustrations and connections, is certainly calculated to bring out as many of the finer feelings as the studies we have named.

As a specimen of agricultural literature, the *Farmer* compares favorably with any other publication, and we believe has contributed as much toward the improvement which has already taken place in the farm-worker among men, as any other paper. While its signified aim has been to improve the cultivation of the farm, it has done as much, or more, in another direction, by cultivating or improving the cultivation of the *owner* of the farm.

Of the cultivation of the farm-worker, it has said nothing of its intentions or success; and when, in the closing remarks of the last volume, the editor asks, "Have we made any progress in agriculture during the present year?" he never once hints that the farmer himself has improved, as *we* claim to have done.

We hold that no agriculturist can *read* a volume of the *Genesee Farmer* without improving, and believe it is the manifest intention of its editor all the while to make it a man-improving as well as farm-improving paper. We think we discover this fact sticking out all through the volume spoken of. It can not be claimed as accidental; it *is* intentional—done with *malice prepense* and aforethought.

In conclusion, we ask, is the man-improving work spoken of a laudable one? We claim the improvement of his home, and farm, and country, to be. It strengthens our civilization. In fact, agricultural improvement is the basis of civilization. It strengthens our government. The man may do all this without improvement. Yes; but the farmer is the defence and hope of his country—he is a soldier on furlough, with his ballot to represent the sword of his defence. Anything tending to educate him, and give a mind above the groveling narrowness of nature, is commendable. It will make a more intelligent voter of him, and he will rear that about his home which will be better loved and more worthy of being defended.

The agricultural paper, as compared with the political, is doing much more toward making our ruralists intelligent voters, as well as good farmers. Their mission is, then, a noble one. Their teachings reach and interest the circle around the hearthstone, for they talk of things which the most illiterate readily understand. The subjects of the agricultural paper are not laid in far-distant climes; the garden, the field, every homestead, is described, and thousands have been brought to improve their farms and themselves by reading such papers as the one before us.

It is the manifest duty, then, of every farmer who would seek to build up happiness, industry, and self-culture among his class, to increase the circulation of this paper and other agricultural literature. It is good seed, and will produce good and abiding fruits. W. H. G.

Lee Center, Lee Co., Ill., Dec., 1857.

PIG BREEDING.—An experienced English pig breeder says: "In breeding, the sow should be larger than the male, and the male the most perfect of the two, as the sows will generally breed to the boar; that is, the good or bad points of the male will preponderate more in the young ones than those of the sow. And I have found that the boar the sow may have had pigs to, the litter before, has a great deal to do with the following litter. I once put a black sow to a white boar, and had some black and white pigs; I then put her to a black boar, and still had some black and white; and I had to wait for three litters before getting rid of the white. I once purchased a large-bred Yorkshire boar, and more than 90 per cent. of his stock died from inflammation of the lungs, or were more or less affected. I afterwards learned that the sire of the boar died from the same complaint. All this convinced me how particular one should be in using a pure and sound male animal."

FATTENING SHEEP IN WINTER.—Put them in a dry, warm place, and let them have plenty of fresh air; give them one quart of oats each, morning and evening, with hay and pure water. I fed one in this way, last winter, for three months, and it was admitted by competent judges to be as fat a sheep as they ever saw. I sold it to a butcher for $11. SILAS BUSH.—*Shanecateles, Onondaga Co., N. Y.*

THE BEST TIME TO CUT TIMBER is about the first of February. At this season the timber is free from sap. I have taken up posts cut at this season, which had been set twenty years, and they were perfectly sound. JOHN JOHNSON.—*Mt. Washington, Ohio.*

WHAT CAN FARMERS DO TO ELEVATE THEIR CALLING?

EDS. GENESEE FARMER:—Having been brought up a farmer, and having voluntarily chosen farming for my vocation in life, I have always felt desirous that the agriculturist should assume that position in society to which the nobility of his calling justly entitles him. I have, therefore, earnestly pondered the question, What can farmers do to elevate their calling? I am confident that, if farming is ever exalted to its true dignity, farmers themselves must do it. The flatteries of those outside of our calling can never make us respected by mankind, until we assume a position that will command their respect.

The first thing to be done toward elevating our calling, is to cultivate our minds. Illiterate persons can not receive the sincere respect of the intelligent and the refined. A man's material creations are generally a pretty faithful transcript of his ideal ones. If ever we see a perfect model of a farm, it will be the offspring of a thoroughly and symetrically developed mind—a mind well stored with a knowledge of the arts and sciences. Every farmer has it in his power to acquire a good education, if he improves his advantages, even though his school-days, so called, are past. During one-half the year we have several hours every evening to devote to study, which, if duly improved, will enable us to master those sciences which reveal all that is now known of agricultural theory. If we will read a few of our best agricultural papers, we may keep pace with the discoveries and improvements in the sciences, and at the same time imbibe a little of that enthusiasm so necessary to give zest to any pursuit.

Every agriculturist should also be a horticulturist. Horticulture renders the tilling of the earth a more attractive employment. It is more elevating and refining to the mind. It qualifies us to surround our homes with those ornaments and luxuries which render the farmstead so inviting. By a knowledge of horticulture we may produce such an endless succession of fruits and vegetables as to almost reproduce the *first garden*. Then let us combine agriculture with horticulture, and we may render our farms and dwellings so beautiful and attractive as to win the hearty respect of all classes.

No one can look upon the homes of the more intelligent and progressive farmers—the elegant and substantial dwellings, the convenient barns, sheds, corn-houses, piggeries, heneries, &c., the tastefully arranged door-yard and parterre, the cleanly cultivated and well-filled garden, the fruit-yards and orchards, and the well-planned, well-drained, well-fenced, and well-cultivated fields,—without feeling an involuntary respect for the owner—without acknowledging that he is a true nobleman.

Would that the number of such homesteads were multiplied indefinitely. Then would the farmer be awarded by general acclaim his true position in society. Then no longer would the farmer's son seek a more honorable career in commerce or in the learned professions, nor the farmer's daughter hope to exalt her condition by an alliance with a city gentleman.

P. C. REYNOLDS.

Near Palmyra, Dec. 2d., 1857.

DUTIES OF LANDLORD AND TENANT.

To cultivate confidence and good feeling by doing as we would wish to be done by, is the greatest of all duties, in a social point of view, and applies very forcibly to both landlord and tenant in their relations to each other. Legal contract or lease is considered to be the chief basis of these relations; and it sometimes happens that the landlord finds that he can construe a sentence or two of the lease to his advantage, and take more labor, produce, or money, than was originally intended. This the tenant contends against, and with his legal advisers searches for some property which the lease does not require the tenant to protect, and commits depredation upon it. Litigation is the issue. Hence, landlords are often forced to sell their dilapidated farms which they had in reserve for their sons. The consequence is, that these sons are compelled to resort to some other means to obtain a livelihood; or by neglect become inebriates or highwaymen, and in the end *are the inmates of prisons*. The tenant, cried down on account of having difficulties with his landlord, can not get another farm, and not unfrequently takes the road with the landlord's sons, and his family falls under the charity of the almshouse.

It is the duty of the landlord, as he is generally the most gifted, to carefully study the leading propensities of his tenant; and, if he is industrious and careful, to give him an opportunity of making a few dollars more than the contract allows, and to let him know that if he does well he will be well treated. He should be assisted occasionally, as judgment may dictate or necessity require. A little encouragement and a kind word may make labor sweet and pleasant, and also be a source of profit. If the landlord shows symptoms of oppression, the tenant will think that as good blood runs in his veins as in the landlord's, and will resist the tyranny.

It is the duty of the tenant to guard and protect the property committed to his keeping, and to consider that he is not only bound by a civil contract, but morally. He has the privilege of drawing the essential elements of fertility from the soil belonging to another, and appropriating it to his own use; and he has a secure home so long as his contract lasts.

Thus the duties of landlord and tenant appear to be similar to that of the family. Temperance, frugality, and forbearance, are necessary to make family duties pleasant and agreeable, and to insure happiness; and they are just as necessary in the relation of landlord and tenant. In short, the real duties of the landlord and tenant consist in a careful attention to each other's interest and welfare. If this is their aim at all times, those little differences and jealousies which often make this relation so galling, will seldom occur.

There are three kinds of tenants. First: Those at will, who are on their good behavior. Second: Those who rent by the year, or for a term of years. Third: Tenants for life.

Our soil is as capable of supporting as many tenants as that of Russia, if it was improved in the same way. Most of the tenant farms of that country have but four acres each. If the duties of the landlord and tenant were more considered, we should not have so much uncultivated land, nor so many of our workingmen going West in search of homes.

J. HETTENBAUGH.

WESTERN N. Y. FRUIT GROWERS' ASSOCIATION.

This Society held its Annual Winter Meeting in this city January 6th and 7th. The following officers were elected for the ensuing year:

President—H. P. NORTON, Brockport.

Vice Presidents—J. J. THOMAS, Union Springs; WM. BROWN SMITH, Syracuse; LEWIS F. ALLEN, Black Rock.

Secretaries—C. P. BISSELL, Rochester; JOHN B. EATON, Buffalo.

Treasurer—W. P. TOWNSEND, Lockport.

Executive Committee—P. BARRY, Rochester; JOHN J. THOMAS, Union Springs; C. L. HOAG, Lockport; WILLIAM BROWN SMITH, Syracuse; JOSEPH FROST, Rochester.

Committee on Native Fruits—JOHN J. THOMAS, Union Springs; P. BARRY, Rochester; THOMAS SMITH, Geneva; E. C. FROST, Catharine.

Committee on Foreign Fruits—GEO. ELLWANGER, Rochester; T. C. MAXWELL, Geneva; J. C. HANCHETT, Syracuse; C. M. HOOKER, E. A. FROST, Rochester.

Committee on Nomenclature—P. BARRY, W. P. TOWNSEND; J. B. EATON; JOSEPH FROST; J. J. THOMAS.

Committee on Finance—GEO. ELLWANGER, JAMES VICK, Rochester; T. C. MAXWELL, Geneva; WM. BROWN SMITH, Syracuse; W. P. TOWNSEND, Lockport.

The *General Chairman* of last year, P. BARRY, was re-elected, and empowered to appoint the *County Committees*.

The Treasurer made his report, showing a balance of $32.71 in favor of the Society.

The following question was proposed for discussion:—

What soil is best adapted to produce the Apple in the greatest perfection, both tree and fruit; also, the best soil for the Pear, Peach, and Cherry?

BEST SOIL FOR APPLE ORCHARDS.

LEWIS F. ALLEN, of Black Rock, remarked that there are several kinds of soil adapted to the growth of the Apple—it does well in the Northern States, the Canadas, and also in the South and West. The Apple is not very difficult to please; but, taking all things into consideration, he thought Western New York, from Syracuse to the Niagara river, is as well adapted for this purpose as any section of the Union. From personal observation, he could also speak favorably of Canada West, Northern Ohio, and the eastern part of Michigan. The flavor, however, of the fruit raised in those localities, he did not consider equal to that of the fruit of Western New York. The difference in soil and temperature, and other special causes, of various localities, greatly affects the character of fruits; so that varieties good in one section are poor or worthless in others, and *vice versa*, making it impossible to compare fruits grown in sections widely distant. He had seen good apples raised on soils that were almost blowing sands, and in New England they flourish on granite soils. Some apples do best on particular soils; and he believed the *Newtown Pippin* to be one of these. The *Rhode Island Greening*, also, is not the same here that it is in its native home. He considered it much affected by the soil in which it grows.

Mr. SPENCE, of Starkey, thought that climate affects fruits as much as soil, and agreed with Mr. ALLEN, that the Apple would adapt itself easily to different soils.

H. E. HOOKER, of Rochester, said that the question refers to various soils in the same locality, and not to different sections of the country. The character of the surface-soil he thought not so important as the formation of the sub-soil. A gentleman, yesterday, manuring his orchard, which was unproductive, asked him if he thought it would promote its fertility. His answer was, that as it was wet and undrained, the manuring would probably be of little benefit. He had always found the best orchards on land well drained, either naturally or artificially.

P. BARRY—We know that good trees and apples are grown on light soils, but they require much more manuring. The same is the case with granite soils in New England—they must be heavily manured. Dryness of bottom, as referred to by Mr. HOOKER, is very important; but a strong yellow clay, or heavy land, requiring drainage, is better than a sandy soil, even for a Peach orchard. As Mr. ALLEN has remarked, the Apple is found in perfection in all parts of the country; and from recent observations through the Western States and other portions of the Union, the ideas that he had formerly held of the changeableness of the characters of fruits by soil and climate, had been greatly modified. Even the *Fameuse*, which he, with others, had always considered to be one of those most affected at the West, he had found in Central and Southern Illinois to be good, large, and hard. The *Newtown Pippin*, also, was there a general favorite. The *Spitzenberg* was fine, firm, and solid, and good as any grown on the Hudson. I believe we are quite in the dark in reference to this matter.

J. J. THOMAS had seen the *Newtown Pippin* at Cincinnati as fine as any grown on the Hudson; and the *Spitzenberg* at the far West he had found excellent. On the subject of soils, his experience was, that wherever good crops of corn can be raised apples may be best grown.

LEWIS F. ALLEN could not speak so well of these fruits at the West as the gentleman who had just preceded him. He had, however, seen the *Yellow Belleflower* at the West very fine; but, as a general rule, some local apple is the one best adapted. He agreed with Mr. BARRY, that a dry sub-soil is essential; but a *naturally* dry sub-soil is what is needed, and not one formed artificially. Land artificially drained he had never found to answer so good a purpose for an orchard as that which is naturally dry. If he intended to plant trees, and had a farm on which there was not land naturally dry, he knew of no remedy which would be so effectual as to trade it off for such as is suitable for the purpose.

H. E. HOOKER thought underdraining one of the greatest considerations for an orchard, but his own

experience coincides with the remarks of Mr. ALLEN about a naturally dry sub-soil. He has an orchard standing on a springy hill-side, which he had underdrained with tile; but the fruit is always small, knotty, one-sided, and worthless. Another orchard of his, on land with a naturally dry, porous subsoil, produces fruit, both in quantity and quality, to his entire satisfaction. He thought a few varieties might succeed on moist soil.

Mr. SPENCE was surprised to hear tile drainage denounced for orchards, and farms that need such treatment recommended to be traded off to some unfortunate neighbor! Drainage, whether natural or artificial, is the same. He has an orchard on a low, moist, rich soil, the roots of which are often bathed with water; and he has another on high land, but it never bore so well as the low one.—Lately he has underdrained the low orchard with tile, from three to four feet deep, but could not yet say anything of the result.

Mr. VICK thought that before this point could be decided, Mr. HOOKER should explain how he underdrained.

Mr. BARRY said that perhaps Mr. HOOKER's land is no better after draining than it was before, and he would now say more than he had before: he would prefer a strong land that would require draining, to a light soil. He was surprised to hear gentlemen of so large experience express such opinions. It is well known that tile draining is eminently beneficial for farm crops, and trees require no better or different land than such as is well adapted for general farming purposes. As the orchard which Mr. HOOKER refers to is on a side-hill, he was inclined to think that the drainage was ineffectual, as it is well known that side-hills have always been considered the most difficult to drain.

Mr. MAXWELL thought that he could drain a side-hill without any trouble—had done considerable such draining—always laid the tiles straight up and down the slope, and found them to work well.

Mr. SCOTT said SMITH of Deanston had discovered the true method of draining side-hills, by tapping the springs.*

Mr. B. SMITH, of Geneva, thought that underdraining would accomplish all that its most earnest advocates claim for it.

J. J. THOMAS would like to inquire about the depth and direction of Mr. HOOKER's drains.

Mr. HOOKER drained down the slope; the drains were from four to ten rods apart, and from two and half to four feet deep. The surface of the land was broken, so that it was impracticable to lay out the drains in straight lines or at regular distances.—Some parts of the land appearing dryer than others, he had put the tiles in at greater distances. A part of this land, in all respects similar to that where the orchard stood, and drained in the same manner, was cultivated with corn and other farm crops, and drained well.

Dr. P. P. BUSAROT, of Dansville, had been much delighted with the discussion; but it was not clear to his mind that land could be considered to be well drained merely because tiles were laid through it at certain distances apart, without reference to the peculiarities of the situation. Drains should be laid close enough to do their work effectually, whatever the distance required might be. He has an orchard on the border of Cayuga Lake, that was in fine bearing condition for several years past, and until within the last two years, when the water of the lake has been higher than for fifty years before. Many of these trees are now dead, and the remainder are in a dying condition. This orchard now stands only two feet above the level of the lake, but previously the usual height was from six to eight feet. Now, as the only apparent reason for the death of this orchard is the saturation of the earth with water, so it is evident that if this water could by any means be removed, the land would be restored to its former fertility. Here is a fact indicating the advantage of underdraining for orchards.

LEWIS F. ALLEN and H. E. HOOKER made similar remarks, to the effect that they did not wish to be understood as denouncing artificial underdraining for orchards; but that in their opinion it is unprofitable to underdrain for this purpose when so much land can be obtained that is naturally adapted to it, and the low land could be profitably used for pasturage and meadow.

L. B. LANGWORTHY considered the quality of the soil of little consequence or value, but underdraining everything. Plants receive comparatively little of their substance from the soil, but mostly from the atmosphere, through their leaves. Soil is only a substance in which to fix plants to keep them in place, (!) and an excess of moisture at their roots impedes their healthy organic action. A dry subsoil, therefore, he thought worthy of the cultivator's first and last attention.

F. W. LAY, of Greece, had observed that apples grown on light soils were apt to decay sooner than those grown on heavy lands.

L. F. ALLEN had noticed that apples grown in warm, dry seasons, would decay sooner than those of cool, moist summers.

S. L. FULLER, of Conesus Center, has a neighbor who has two orchards, one on a flat and the other on a high land; and the fruit from the low land always keeps the best.

EVENING SESSION.

This session was opened by an elegant, learned, and appropriate address, from the late President, J. J. THOMAS, a portion of which will be published in a future number.

PRUNING.

Mr. BARRY, who was expected to have delivered a lecture on the subject of Pruning, rendered as an apology for not doing so, absence from home for some time past.

The subject of Pruning, he remarked, is far more important than is generally considered. It requires the study of trees, and the whole science of vegetable physiology; and, as the President in his address has said, is a beautiful subject.

* It was ELKINGTON of Warwickshire, not SMITH of Deanston, that adopted the practice referred to by Mr. S. SMITH advocated the system of laying shallow parallel drains at regular intervals, and it is the one which has been most generally adopted in England. PARKES adopts the same system, only that he recommends deeper drains. The old-fashioned "Elkington system," in special localities, is good, as far as it goes; but it can hardly be considered the "true method of draining side-hills," as it has little influence in draining off the surface water. ED.

A person may have the knife and the saw in his hand all his life, and yet not know how to prune properly. Pruning is both a science and an art; and the pruner must know why he prunes, as well as when and how, and should be able to give a scientific reason for every operation.

A tree consists of many parts,—roots, stem, limbs, leaves, and so forth,—and one part depends on another, and the healthy condition of the tree depends on the healthy action of all these parts.

Trees pruned and trained low are found best adapted to the wants of the cultivator. Without the interference of the knife, trees grown in open situations will of themselves naturally take this form, the branches starting out close to the ground, and assuming somewhat of a pyramidal shape. Yet, however closely we may follow nature in this respect, the general conditions of fruit-bearing trees are not natural conditions, and much skill and judgment are necessary, in the cultivator, to produce a healthy and vigorous development of his trees in these circumstances.

We have planted in great haste, in this country, and without knowledge on this subject, thereby incurring great loss, which, for the future, can be remedied only by stricter attention to this branch of horticulture.

In answer to an inquiry, he would reply, briefly, as a general rule, pruning should be done in the latter part of winter or very early in the spring. Much summer pruning may be done to advantage by pinching off the ends of shoots in a growing state, and thus save much subsequent labor.

CULTIVATION OF THE GRAPE.

Dr. P. P. Bristol having been requested to explain his method of grape-growing, replied that at the present time he was unprepared to give any very minute account of his experience or practice.

The custom of pruning the Grape vine, he said, has been practiced from the earliest times, as all past experience has shown this to be an essential operation for the production of good fruit, on account of the tendency, in all the Grape genus, to a superabundance of wood and foliage. The question now naturally arises, how much and when the vine should be pruned. Different cultivators have practiced different methods. I shall confine myself to the pruning of our hardy grapes in this climate.

As the pruning and the culture are inseparable, it will also be proper for me to speak of the culture of the vine. Plants from two to three years old, or even four years old, I consider the most favorable for transplanting from the nursery. The ground where they are planted should, in all cases, be underdrained. If the fruit is intended for market and table purposes, the vines should be planted in rows each way, from six to twelve feet distant.

Mr. McKay, of Naples, has obtained from one acre of *Isabella* grapes, standing sixteen feet apart each way, 11,000 pounds. The proper distance for wine grapes is from three to four feet each way. My system of pruning is, the first year to cut within a foot of the ground—the second year cut to about three feet of the ground, and stake the vine well and allow three canes to grow. The pruning should be done in the fall or early winter, as the wood is open, and requires the cold and frost of winter to close up the pores, from which, if pruned in the spring, the sap would ooze out and injure or destroy the vine. The cut should be an inch or more above an eye, to save it from being killed. As the vine grows larger, it will need close pruning—I prune to two buds. I prefer to train the vine in a fan form, on wire trellises. About the middle of June, I pick off the ends of the shoots and take off about one-half the young fruit. As a general rule, in all stages of the vine, one half of the wood and one-half of the fruit should be removed; the fruit that remains will weigh as much as the whole would if allowed to grow, and will be much finer. Mr. Fay, of Brocton, Chautauque county, showed some grapes at the last State Fair, which were the finest I ever saw; and he allowed only five bunches to grow on a vine. I have a vineyard of eight acres, three years old, which bore this year 3,000 pounds of grapes, and among these were only three bushels of imperfect ones. I think highly of the renewal system of pruning, and shall adopt it in the future treatment of my vines.

J. J. Thomas had had the privilege of examining some of the grapes grown by the previous speaker, and could testify to their excellent character. Many of them were seven-eighths of an inch in *diameter*.

BEST SOIL FOR PEARS.

The clause relating to the best soil for Pears, etc., of the question under discussion in the afternoon, was now resumed.

H. E. Hooker considered strong clayey soils best for the Pear. Good draining is necessary. Has seen cases where he thought the Pear would bear moisture better than Apples or Cherries.

L. F. Allen—I do not mean to say much on this subject, because I do not know much about it. I think the Pear a very capricious, as well as a very delicious fruit, and believe horticulturists yet in the dark about its cultivation. I have invested more dollars in pear-culture than I should here like to name.

Forty years ago, when a lad, in one of my freaks of enterprise, I went to Detroit, and was then strongly impressed with the strength and grandeur of the old pear trees standing on both sides of the river. Six years ago I was again there, and thought I would examine the condition of those trees. The land where they grew was a heavy clay, and belongs to the Onondaga salt group. I drove up the river several miles to Lake St. Clair, and found these trees and orchards all along the bank of the river, which was about forty feet above the water.

These trees, which were probably planted about the time of the settlement of the State, in 1760, must now be nearly one hundred years old. Many of them are from fifty to sixty feet high, and large and symmetrical in their proportions. Thus these pear trees have flourished, while in the hands of the uncultivated French settlers of that district, who are nearly as wild as savages.

I went up to a hut, and found there an old French woman, who could not speak English, and a boy, by whom I conversed with her. These trees, she said, had been about the same size as long as she could remember, and thought that when she was young, there were more trees than at that time. The old woman could not tell her age, but I should judge she was about eighty years old.

Some of the trees stood in lines, but through others no rows could be traced. It appeared as if

the whole had been once an orchard, with the trees standing in rows at regular distances.

At that time the trees were loaded with fruit about the size and shape of the *Virgalieu;* their color was green, and they were puckery to the taste, and not fit for table use. The trees yielded from thirty to sixty bushels each every year.

Here, then, in this clayey loam, which had not been cultivated, for many years at least, if ever, and probably never manured, stood these old pear trees, magnificent in their proportions and vigorous foliage. This was evidently a good pear soil; but, *nine-tenths* of the original trees had gone, showing that the Pear is a precarious tree.

On the Canada side of the Niagara river, at ——, are hundreds of old pear trees which were planted at the time of the Revolution, by tory settlers from the States, with seeds which they brought with them from New Jersey and some other parts. The soil is poor, but the trees are in a flourishing condition, and unaffected by the blight. Few of the apple trees then planted now stand.

Some of these trees, owned by an acquaintance of mine, I induced him to graft with scions which I let him have from my garden, among which were the *Marie Louise, Glout Morceau. Bartlett, Winter Nelis,* and one or two other varieties. He grafted them thirty feet high, and they now bear splendidly.

The soil where these trees stood is a heavy clay. On the opposite side of the river, in a lighter soil, many pear trees have been blighted.

BEST SOIL FOR THE PEACH AND CHERRY.

Mr. BARRY—The Peach requires a dry soil, and will succeed much better on light soils than most other fruit trees; but a heavier soil will also be found well suited to it, if it is dry. The Cherry requires a dry soil of almost any kind. Had heard the opinion advanced that the cracking and gumming of cherry trees was most prevalent on light sandy soils, and thought this to be the case.

Mr. STACEY could concur with Mr. B., that the Cherry is not adapted to moist soils—he had lost about 25 trees by the stoppage of an underdrain.

H. N. LANGWORTHY had twenty years experience in growing cherries on light sandy soil, with good success.

Mr. BARRY recommended as an assortment of cherries for family use, the *Early Purple Guigne, Belle d' Orleans, Gov. Wood, May Duke, Black Tartarian,* and *Black Eagle* for early sorts; for a late sort, the *Reine Hortense,* and the *very* late, *Belle Magnifique;* for market he would add *Napoleon Bigarreau, Rockport Bigarreau* and *Elkhorn.*

PEARS ON PEAR STOCKS.

The question, what varieties of Pears should be cultivated exclusively on the Pear stock, and what varieties exclusively on the Quince stock, was introduced, and Mr. BARRY named the following for cultivating exclusively on the pear stock: *Bartlett, Flemish Beauty, Dix, Beurre Bosc, Winter Nelis, Lawrence* and *Shelton.*

MORNING SESSION.

GRAPES BEST ADAPTED TO WESTERN NEW-YORK.

This morning the question discussed was—*What varieties of the Grape are best adapted to the climate of Western New York?*

Mr. BARRY—Although there are many new varieties just now claiming attention, and have so far promised to become valuable acquisitions, yet the *Isabella* is the only one of established reputation which I would be willing to plant extensively in Western New-York.

L. F. ALLEN agreed with Mr. BARRY that the *Isabella* is the best for this section, but even that can not be depended on for ripening, and thought that some other varieties in a few years would prove to be better adapted than the *Isabella.*

Mr. BARRY would like to inquire of Mr. A., if the cause of the fruit not ripening in the cases he referred to, was not the fault of the cultivator or of the soil.

L. F. ALLEN replied that he made a broad statement, and he referred to the Grape as it is usually grown. Thought there were many localities in Western New-York, especially on the borders of the lakes, which were adapted to the growth and ripening of the *Isabella.*

H. E. HOOKER, so far as his experience was concerned, thought the *Isabella* the best for this climate.

J. J. THOMAS thought that there are many localities in Western New York which are good for the purpose of grape-growing, and such should be selected.

Mr. MAXWELL would recommend the *Isabella.*

Mr. PECK, of Bloomfield—I have a vineyard of one hundred vines, which this year bore seventy-five bushels. I sold six hundred pounds this fall, in Buffalo, at eighteen cents per pound. Last year I sold a quantity in New-York at twenty-two cents per pound. I would recommend the *Isabella* for general cultivation in Western New-York. My land is a clay loam, naturally dry, descending to the north. An indication of the ripeness of the fruit is the withering and drying of the stems. Have preserved the fruit, packed loosely in boxes, until March. I do not think taking off the leaves to admit air and light, as practiced by some, any benefit; but, on the contrary, an injury. My method of pruning is as follows: Commencing by planting a vine two years old, I let one cane grow the first year, and in the fall cut it back to six inches from the ground; the next season I grow two horizontal canes, one each side of the stem, letting them run about six feet each way, and then pinching them off; the next year, from these horizontal canes, I train uprights, parallel to each other, about fourteen inches apart to the top of the trellis and stop them; the next year I prune off the side shoots to two buds. I practice the renewal system with the uprights. The vines stand twelve feet apart each way, with dwarf pear trees occupying intermediate rows, and are cultivated with the plow and cultivator. One hundred vines and thirty-five dwarf pear trees occupy half an acre of ground. I obtained this year seventy-five bushels of grapes, weighing, at the rate of forty pounds to the bushel, three thousand pounds. The vines have been planted four years.

W. B. SMITH had preserved grapes until June, by packing in boxes, with layers of cotton batting between them; but they tasted of the cotton.

C. P. BISSELL had preserved them the same way as Mr. Smith and without taste from the cotton.

Mr. PARSONS had some experience in growing grapes; generally packed from seven to eight bush-

ch a year; had tried different methods of preserving; but the best way, he had found, was to take boxes in which several layers could be placed, with cotton between the layers, and kept in a cool place. Great care must be taken in handling them, not to bruise them, and they must not be moved much after packing.

Mr. SPENCE had kept grapes in cotton in a cool place in garret or cellar until the latter part of March. He had found that he had to be very careful in handling, and thought that jarrings rupture the minute interior cells of the fruit, when they immediately commence to decay.

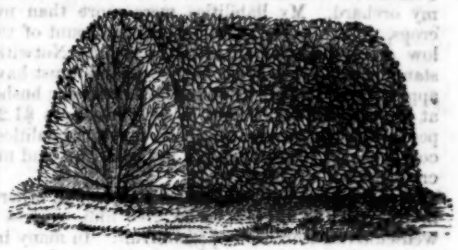
They Society agreed to hold their Summer Meeting in June, in this city, and the Fall Meeting at Buffalo.

TRAINING HEDGES.

It is not an easy thing to rear a good hedge. Even in England, with its mild winters and cool summers, and with plants unquestionably well adapted to the climate, *good* farm hedges are not as universal as is generally imagined. Those who have "coached it" from London to Birmingham, in the good old times when the railroad locomotive lay quiet in the brain of STEPHENSON, must have seen hundreds of miles of hedges that would be considered a disgrace to an American farmer. And even at the present time, notwithstanding the vast improvements which have taken place during the last twenty years, the traveler over the same road would find that even in the districts where fencing has received the most attention, and where good hedges are the rule, that there are a vast number of exceptions. It is difficult to find a hedge of any extent without a gap. To rear a good hedge in any country, requires more care, skill, and patience, than most persons are able or willing to bestow. Still, a good hedge can be made, and is worth all the labor it requires.

SPECIMEN OF A BADLY TRAINED HEDGE.

The great error in training plants into a fence, arises from an inconsiderate hastiness. We are in such a hurry to obtain a fence, that it is with difficulty we can bring ourselves to cut back the upward growth to the extent which the necessities of the case require. The plants are allowed to follow their natural tendency, and form a hedge bushy at the top and open at the bottom, as shown in the accompanying engraving. Those who have such hedges had better cut them down at once to within two or three inches of the ground, and try again.



SPECIMEN OF A PROPERLY TRAINED HEDGE.

To show what can be done by skilful and judicious training, we give a cut of an osage orange hedge growing in front of the grounds of H. E. HOOKER & Co., of this city, and which we had drawn and engraved for the *Rural Annual*. It is a beautiful hedge, and one which will turn any animal. From an able article on Hedges, in the *Rural Annual* for 1857, written by Mr. HOOKER, we abridge an account of his method of planting and training the osage orange for hedges.

The plants may be one year old or more, but yearlings answer every purpose. Plant in April or May, in a single row, six or eight inches apart. Keep the ground clean and mellow all the season, and few plants will die, and the year's growth will be from two to three feet. In April following, cut the plants back to within one or two inches of the old wood. Prune about the first of July, giving the hedge a pyramidal form—not shortening the *sides* much, but cutting back the tops severely.

In the spring prunings which follow, care must be taken to keep the *top* down, and gradually spread the sides: the top can be raised any year. Every summer, about the first of July, the coarse growth may be cut back, and the hedge kept neatly in shape by pruning, if necessary, a second time.

THE WOODPECKER—RURAL ANNUAL.

EDITORS GENESEE FARMER:—I am highly pleased with the *Rural Annual* this year. The article on Birds, by Mr. BEMENT, is alone worth the price of the book. But he has entirely mistaken the object of that rascally little Striped Woodpecker in perforating the bark of our apple trees. I have been a strict observer of their habits for many years, and I have ascertained that their sole object is to tap the bark to suck the sap that circulates between the bark and the wood in forming the new grain of wood. Each little fellow, after making many holes in several trees, follows them up from day to day for about six weeks, or so long as the sap runs. Their fun may be spoiled, and the trees saved, by white-washing the trees (about the time they commence boring) with a wash made of lime and strong soap suds, or a coat of coal tar and a little slaked lime dusted on before it dries. H. HECOX.

South Rutland, Jeff. Co., N. Y.

PROFITS OF FRUIT CULTURE.

"I DON'T know," said a friend of mine, "what I should have done this winter, had it not been for my orchard. My liabilities were more than my crops, though good, could meet, on account of the low prices paid for all kinds of grain. Notwithstanding the scarcity of money, people must have apples; and I readily obtained 75 cents per bushel at the orchard, $1.00 and in some instances $1.25 per bushel in the market, for superior qualities: consequently I have met all my liabilities, and my credit is still unsullied."

This man's experience has been that of all others, in this part of Canada, who, like him, possess a well-cultivated orchard of good fruit. In many instances, farmers have made more money from an orchard of three or four acres than all their farm beside.

That fruit culture is profitable, and that it adds materially to the luxuries of the table, has become pretty well established. This fact is proved by passing through our country and noticing the vigorous young orchards on almost every homestead, even on newly-cleared farms, where, if properly planted and attended to, the virgin soil of the forest will cause a rapid growth, so that by the time the stumps of the primitive "giants" are decayed, their places are occupied with a blooming and profitable forest of fruit trees.

If I see a homestead destitute of an orchard, I am pretty sure that neither the *Genesee Farmer* nor any other agricultural periodical is read there.

It is not the apple only that should engage our attention; for there are many kinds of fruit equally hardy, if we select the varieties adapted to our climate. Pears do well, and command a high price. Plums, of late, have not done well; the combined effects of the curculio and extreme frost have injured the crop. Peaches did well last year, and enormous quantities were sold in our markets at $2 per basket. Cherries, of the improved English sorts, die out after a few years' nursing; but, when budded on the common Kentish stock, they do well, as the growth is much slower and they blossom later. The common red is a sure bearer, and sells at $2 per bushel. We are quite safe, at all times, in cultivating the small fruits, except grapes; for they not only bear well, but sell well. Raspberries and strawberries sold, last year, at 25 to 30 cents per quart; black and white currants, at 12½ to 15; and gooseberries, at 25 cents per quart.

It is pleasing to see the increasing interest among our farmers for fruit culture; and I hope the day is not distant when fruit will be as indispensable, as an article of food, as potatoes. SIGMA.

Woodstock, C. W., Jan'y, 1858.

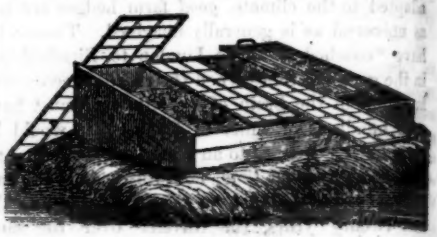
MAKING HOT-BEDS.

EDITORS GENESEE FARMER:—One of your correspondents inquires the best way and material for making hot-beds. As I think it is now about in season to make preparations, I beg to offer a few remarks.

If the manure is quite fresh from the stable, and a large quantity is wanted, it should be prepared three weeks or a month before it is time to make the bed; if but a small quantity, two weeks may be early enough. The manure should be got together, and thrown into a heap under a shed or other sheltered place; or, if left outside, it must be protected with old boards to keep the cutting wind and severe frosts off, or it will not ferment evenly.

After the manure is all got together, it should be allowed to lie in a heap about six or seven days, and then be all turned and carefully mixed with the manure-fork. In about ten days, turn and mix it again; in ten or twelve days more it will be ready to be made up into a hot-bed.

Choose a rather dry place, sheltered from cold winds. Measure out the space one foot wider every way than the frame that is to stand upon it. Let the manure be thoroughly shaken and mixed with a fork, *and well beaten down with the back of the fork*, as the bed is proceeded with; and not trodden down with the feet, as some do; for it is then liable to heat and settle unevenly. If any part of the manure has heated itself dry, which will be known by its being dry and dusty, it must be watered; if the manure is too wet, a good portion of dry leaves will benefit it very much. The leaves will make the manure better, and the heat milder, and last longer.



The bed should be made three feet high. The frame should be one foot deep in front and twenty inches at the back.

About the first of March will be usually early enough to make up the bed. When done, put on four inches of fine light earth, one-third decomposed hot-bed manure, two-thirds turfy sods, with a little sand is best. In a week it will be nicely warmed through. Plant a few cucumber seeds in the middle of each sash, and divide off the remainder of the room for a few cauliflowers, early cabbages, tomatoes, early radishes, celery, purple egg, etc.

The temperature of the bed should be about 60 deg. by night and 75 deg. by day, and 85 deg. with sun. Water when dry, with water of the temperature of the bed. Cover up warm at night; and should the heat decline too much, it must be renovated by linings of hot manure round the outside of the bed. Manage the atmosphere of the bed so as to keep the temperature about as directed above. When the other things are all pulled away, the bed can be filled eight or ten inches in depth with the same soil as first recommended, for the benefit of the cucumbers. JOSIAH SALTER.

Rochester, Jan'y, 1858.

McINTOSH says: "In planting fruit trees where the subsoil is of indifferent quality, it is advisable to place under each a piece of pavement 3 feet square and about 12 or 15 inches under the surface, that the roots, when they come in contact with it, may be made to take a horizontal direction. This is one great means of keeping them near the surface and has been found of much advantage."

Is the Genesee Farmer Twenty-Seven Years Old?—In our January number we incidentally stated that "*on its Twenty-Eighth Birth-day* the *Genesee Farmer* put on an entire new suit." Our esteemed friend, Luther Tucker, Esq., of the Albany *Country Gentleman*, objects to this statement, on the ground that the first nine volumes of the *Genesee Farmer* were published by him, and that it was then consolidated with the *Albany Cultivator*. This is true; and if we are to consider that the "*Farmer*" then ceased to exist, the present is the "nineteenth volume," not of the "Second Series" (as has been claimed by the previous publishers), but of the *first series*. But the fact is, the *Genesee Farmer* was continued by other parties after Mr. Tucker removed to Albany, and it has been uninterruptedly published in this city since 1831.

Mr. Tucker says: "We look back with some pride upon the volumes of *our* old *Genesee Farmer*, and confess that we do not like to have the honor attached to them, whatever it may be, so coolly appropriated by another. Age is a good thing, but it is not one of the strongest points in the merits of our Rochester cotemporary." We have no wish to appropriate any of the honor due to Mr. Tucker, Mr. Bateham, Dr. Lee, or any other of the former publishers of the *Genesee Farmer;* neither can we see how the statement that it is now in its twenty-eighth year in any way diminishes the credit due to Mr. Tucker as a pioneer among American Agricultural publishers. If we should ignore the existence of the first nine volumes published by Mr. T., he would have better grounds for complaint.

Mr. Tucker says: "The *New England Farmer*, with similar reason and justice, might considerably increase its age by adding the number of years in which Fessenden's old *New England Farmer* was issued." The cases are not parallel. The old *New England Farmer* was discontinued for want of support, in July, 1846, and the new paper of the same name was not started till December 9, 1848. On the other hand, the *Genesee Farmer* has received the liberal support of the agricultural community ever since it was first published in 1831, and, although there have been frequent changes in its proprietorship, its publication has never been suspended.

Postage on the Rural Annual.—We are informed that some Postmasters have demanded postage on the *Rural Annual*. Now, we have prepaid the postage on *every copy* sent from this office, and the Postmasters have no right to charge postage at the office of delivery. It is an imposition our subscribers should not submit to.

Premiums for Short Essays.—The time for competition for the premiums offered for short essays on various subjects, named in the January number, expires on the fifth of this month. We hope to hear from all those who have any experience on any of these important subjects.

January Premiums.—The competition for our January Premiums has resulted as follows:

1.	I. W. Briggs, West Macedon, N. Y.,	$20	for	107 subs.
2.	Jonathan Miller, Berrysburgh, Pa.,	15	"	91 "
3.	J. H. Hanning, Morriston, C. W.,	14	"	63 "
4.	B. W. Vansise, Waterford, Pa.,	13	"	56 "
5.	R. W. Sawtell, Woodstock, C. W.,	12	"	43 "
6.	Thomas Magee, Johnstown, Pa.,	11	"	40 "
7.	Edward Hoyt, Walton, N. Y.,	10	"	38 "
8.	G. B. Rousseaux, Ancaster, C. W.,	9	"	36 "
9.	F. Brown, Alexandria, Ky.,	8	"	34 "
10.	W. Hibbard, Manchester Station, Ct.,	7	"	33 "
11.	James Wilkinson, Goderich, C. W.,	6	"	31 "
12.	Charles Palmer, Mansfield, Ohio,	5	"	29 "

The premiums will be paid as soon as the parties entitled to them will inform us what books they wish. If the selection is left to us, we will send such as we deem useful.

The Weather and Crops in Northern Illinois.—In a postscript to a business letter, Mr. Horace Starkey, of Rockford, Illinois, says: "All who took the *Farmer* here last year like it very much, and from 100 to 200 subscribers might be obtained in this county, if one had the time to devote to the business. Our winter has been very mild—no snow, and very little frost in the ground. Our crops have been very much exaggerated. Our wheat was less than an average, and corn, owing to poor seed and the cold short season, not more than half an average crop. Little pork has been fattened in Northern Illinois, but more than there is money here to buy. On the whole, farmers' prospects are anything but flattering; and he who has raised enough to support his family and pay his hired help and taxes, may consider himself a fortunate man."

Food of Bees.—The *Flore des Serres* says that steeped oilcake, made from the seeds of the Bene plant (*Sesamum orientale*), is an excellent food for bees. When they have free access to it, they produce an enormous quantity of honey, in winter as well as in summer. This plant is cultivated to some extent in the Southern States, where it was introduced by the negroes from Africa. It is probable that oilcake from linseed, cotton seed, etc., would answer the same purpose to some extent. The oilcake should be made into a paste with warm water. A small quantity only should be wet at a time, or it will ferment.

Pears in Oregon.—Mr. Isaac Ball, of Lawn Arbor, Oregon, writes us as follows:—"I have a *Bartlett* Pear, three years from the bud last spring, that bore last summer 170 good sized pears. When the bud was two years old, it bore 13 large pears. Some of the pears weighed half a pound. Beat Oregon, if you can."

Cattle Poisoned by Paint.—Our esteemed correspondent, P. S. Beers, informs us that Mr. Benjamin Treat, of Bridgewater, Conn., lately lost three head of horned cattle in consequence of licking paint from a freshly painted barn, of which white lead was an ingredient. All efforts to save them proved unavailing.

The pressure upon our columns this month prevents us from giving as many illustrations as we had intended. For the same season, the publication of many valuable communications must be deferred to a future number.

THE UNITED STATES AGRICULTURAL SOCIETY.—The Sixth Annual Meeting of the U. S. Agricultural Society was held at Washington, January 13th, 14th. The Hon. MARSHALL P. WILDER, who has so ably presided over the Society since its formation, could not be prevailed upon to accept a re-nomination, and his resignation was most reluctantly accepted. A piece of plate, of the value of $250, was voted to Mr. W., as a testimonial of his efficient services. The following officers were elected for the coming year:

President—Gen. TENCH TILGHMAN, of Maryland.

Treasurer—B. B. FRENCH, Washington, D. C.

Secretary—BEN. PERLEY POORE, Newburyport, Mass.

The report of the Treasurer exhibited a balance of $1,500 in the Treasury, after paying premiums now due.

Dr. ANTISELL, of New York, read a paper on the mineral constituents of plants. He had "little or no faith" in ordinary soil-analyses, and even looked upon the subject with "disgust."

An animated, and somewhat personal, discussion took place in regard to the value of Imphee and Sorghum. It seemed to be the general opinion that both are valuable, and that the former contains as great a proportion of saccharine matter as the latter, and grows much larger.

Dr. HIGGINS, of Baltimore, Md., read a valuable paper on the "Hog Cholera."

H. F. FRENCH alluded to his recent visit to Europe. As a delegate from the U. S. Ag. Society, he was everywhere received with great courtesy. He alluded to the subject of Plowing by Steam, which is receiving so much attention in England.

B. P. JOHNSON mentioned "Evans' Rotary Digger" as an American machine of much promise.

Rooms have been opened in Washington, and the Secretary is to be in attendance during the session of Congress. We understand the Society is about to issue a monthly bulletin, as well as the annual volume of Transactions.

WE desire to express our obligations to the numerous friends of agricultural and horticultural improvement, in different parts of the country, who have so nobly labored to increase the circulation and usefulness of the *Genesee Farmer*. It is gratifying to perceive that our efforts to make the *Farmer* worthy of its extensive patronage, are so well appreciated. It has now a larger circulation than that of any similar journal in the world.

The improvements in the present volume give very general satisfaction. We annex a few extracts from complimentary notices of the January number:

THE GENESEE FARMER.—This old pioneer among agricultural journals has renewed its age under the management of Mr. JOSEPH HARRIS, its present proprietor, an able, practical and indefatigable editor. Mr. HARRIS was formerly connected with the *Country Gentleman*, where he did great service to the farming community, by his discriminating exposures of the character of some artificial manures then offered to agriculturists. The *Rural Annual and Horticultural Directory*, published by Mr. HARRIS, contains a large amount of valuable information in a cheap and condensed form. Price only twenty-five cents.—*New York Observer.*

The *Geneses Farmer* is one of the oldest of our agricultural journals. It is a monthly octavo of thirty-two pages, handsomely illustrated and printed, at the astonishingly low price of fifty cents a year. It can not be worth less than ten times its cost to any farmer who can read the English language.—*Life Illustrated.*

It is an excellent periodical, and worthy of a large circulation.—*National Era.*

The *Genesee Farmer* is the *cheapest* paper for the farmer that we know of. The matter it contains is reliable, and the farmer who will take it, read it, and profit by its suggestions, will soon find that he can not do without it.—*Home Gazette, Pa.*

This old and sterling monthly is the cheapest agricultural and horticultural journal in the world. It is published in one of the finest wheat and fruit growing sections in the world, and has able correspondents in nearly every State in the Union. It is emphatically the "Farmers Own Paper," *and no farmer or fruit grower should be without it.—Hornellsville, N. Y. Tribune.*

The *Genesee Farmer* is an excellent work; the farmer especially, should not be without it.—*Millbrook, C. W. Messenger.*

This old and popular rural monthly commences its nineteenth volume, second series, with the number for January ensuing. It is an interesting and valuable publication for the farmer, well worth double the price.—*Danseville Herald.*

We invite our agricultural friends to the new volume of the *Genesee Farmer*, for 1858. It has probably the largest circulation of any agricultural journal in the world. It has a larger and more extensive list of correspondents than any similar journal, and no farmer or fruit grower in any section of the Union, or in the adjoining Provinces can read a single number without getting some hint that may prove valuable. We shall be happy to forward the names of any who may wish to subscribe.—*Essex County, N. Y., Republican.*

No intelligent and practical farmer can read a single page of the *Genesee Farmer* without being benefitted. It is supposed to have the widest circulation of any paper of the kind in America—and is probably the best and positively the cheapest paper in the world. We wish Mr. HARRIS continued success in his noble enterprise and praiseworthy efforts to promote the practice, science, and general interest of Agriculture. But for the interest of our own country, we hope every farmer will become a subscriber for that interesting and useful journal. It is well executed with clear type, on superior paper, and embellished with many splendid engravings. No family should be without it. The volume, if carefully preserved, at the end of the year will be worth three times the amount it cost.—*Owen Sound, C. W., Comet.*

The *Genesee Farmer* for January comes to us greatly improved. This is only fifty cents a year, and is worth ten times the money.—*Pontiac, Mich., Jacksonian.*

This sterling agricultural journal has been established more than a quarter of a century, and during its career it has stood before the public as one of the most able journals ever produced. Mr. HARRIS exhibits great ability for his responsible post. His pages are filled with reliable practical articles; they are not long and rambling, but condensed, compacted, direct, and to the point. Every possible subject connected with agriculture is thoroughly discussed here. If every farmer in the country subscribed for this paper and read it, each farmer would be individually benefitted and the country would be richer. These are our sentiments and we express them freely.—*Goward's Real Estate Register, Boston, Mass.*

This sterling publication has just entered upon its twenty-ninth year. The number before us contains knowledge worth to a practical farmer more than the subscription price (fifty cents) for a whole year.—*Brockport, N. Y., Republic.*

Inquiries and Answers.

MICH. AND N. Y. STATE AG. COLLEGES.—(S. POWERS, Beverly, Ohio.) You can obtain the desired information by addressing the respective Presidents, JOSEPH R. WILLIAMS, Lansing, Mich., and Judge CHEEVER, Ovid, N. Y.

We can send you *Barry's Fruit Garden*, prepaid by mail, for one dollar.

CHINESE POTATO.—(M. V. K., Girard, Ill.) WM. R. PRINCE, Flushing, N. Y., can supply them. Before you conclude to "plant two acres," you had better test them on a small scale.

TERRA-CULTURE.—(O. P. B., Miamiville, Ohio.) Comstock's theory of terra-culture is no secret. We have listened patiently while he "disclosed the disclosures," and can not express our opinion of his speculations better than in the language of SHERIDAN: "It contains much, sir, both of what is new and what is true; but, unfortunately, what is new is not true, and what is true is not new."

SOWING EVERGREEN SEEDS.—(PETER FULHEART, Muncie, Ind.) Mix the seed in moist sand, and let it remain for a few days, and then sow very early in the spring, in beds of light loam, and shade them from the sun with cheap cotton cloth, or some other screen, until the plants have become somewhat advanced and hardy.

DEVON CATTLE.—(W. R., Mich.) W. H. LOCK, of St. Thomas, C. W., is a large importer and breeder of the North Devon stock. You can get what you want of him. He exhibited twenty-seven head at the last Provincial Fair at Brantford, and took eighteen prizes. He also received the first prize at Buffalo, for imported cattle.

ASHES ON CLAYEY SOIL.—(S. A. BRONSON, Orwell, Pa.) Ashes, leached or unleached, generally do better on light, dry, sandy soils, than on those of a clayey nature. On wet land of any character, ashes will do no good till it is drained.

PLANTING APPLE TREES.—(S. COOLEY, Four Corners, Mich.) It is not advisable to plant apple trees intended for a permanent orchard, at a less distance than thirty feet apart.

DOMINIQUE FOWLS.—(JOHN PERKINS, Euclid, Ohio.) We do not know who has Dominique Fowls for sale. Parties having them would do well to advertise.

STITCHING AND TRIMMING THE FARMER.—(T. T. N.) The reason we do not trim the *Farmer* is that it is not so well adapted to bind at the end of the year.

GRAPE BORDERS.—Can any of your readers inform me what plants are best adapted for covering the unsightliness of grape-borders, and which at the same time do not hurt the vines by extracting too much moisture from the border. Strawberries have been recommended, but their long roots absorb too much water. How would Portulacca answer? It requires but little moisture, and, if it would grow, would flower profusely and present a beautiful appearance. Have any of your readers had any experience with it for this purpose, or with Verbenas? AMATEUR.

HESSIAN FLY.—I have a field which was sowed to wheat about the 20th of September. As soon as it came up, the Hessian Fly commenced destroying it, and now it is not more than half thick enough on the ground. Now, I want to know if pasturing it with sheep through the winter or early spring will be likely to destroy the fly. If not, is there any remedy? C. G. DICK.—*Marshall, Highland Co. Ohio, Jan'y*, 1858.

HOLLOW-HORN.—Will some of your readers give me, through the *Genesee Farmer*, the pathology and treatment of a disease among cattle, known in the West as hollow-horn? Is it and hollow-tail the same disease; and is not hollow-horn, hollow-tail, and hollow-belly, synonymous terms? R. B. MOREHEAD.—*Big Bend, Butler Co., Ky.*

STACK COVERS.—Please give information in regard to stack covers. Will some one who has used them made of painted cotton cloth tell us of their worth, cost, and construction? This is an important subject to all western farmers, who must always stack their grain. G.—*Lee Center, Lee Co., Ill., Jan'y.*, 1858.

SMUT IN WHEAT.—Will some of your correspondents tell us what will prevent smut in wheat.—FRANCIS MORTON. —*Ann Arbor, O.*

FINING CIDER.—Will some of your correspondents give me the process of fining cider without boiling down. By so doing, they will confer a favor on your Oregon subscribers. Will isinglass answer this purpose, and how much per barrel, and what is the price per pound. W. REBLE.—*Eola, Polk Co., Oregon.*

WIND-GALLS ON HORSES.—I wish to inquire through your paper, if any of your correspondents can inform me what will cure what we call wind-galls on horses? I have a young horse that has a very bad one on his hock, that I am very anxious to get cured. W. W. RECORDS.—*Pleasant Ridge, Green Co., Ind.*

MAD-ITCH.—Will some of your correspondents give the cause and cure of what is called, in this section, mad-itch in cattle? They commence rubbing, and often rub out their eyes, and usually die in twenty-four hours. Not one has ever been known to recover, when attacked with it.—H.—*Albany, Ky.*

WINTERING CATTLE AND HORSES.—I wish two or three of the best farmers who take the *Genesee Farmer*, would give their experience as to the best method of wintering stock, cattle and horses in particular. I feel that there is a vast deal to be learned on that point. G. C. LYMAN.—*Lynn, Pa.*

FEEDING SHEEP.—You will greatly oblige one of your readers by giving, through the *Farmer*, the best mode of keeping and feeding sheep through the winter, so that they will be fit for the shambles in the spring. WM. RENO.—*Newcastle, Lawrence Co., Pa.*

SAW-DUST.—Please inform me, through the *Farmer*, whether an application of saw-dust, in its raw state, to land, for mulching or to plow in, will be of use; or whether it is a suitable article with which to mix night soil. W. B.

New Advertisements this Month.

Vegetable, Field, Flower, Tree, and Fruit Seeds.—J. M. Thorburn, New York.

New Books Just Published.—A. O. Moore, New York.

Imphee Seed.—A. O. Moore, New York.

Hamilton Nurseries, C. W.—E. Kelly & Co., Hamilton, C. W.

Cranberry Plants, New Rochelle Blackberry, Raspberries, Hop Tree, Grapes, &c.—F. Trowbridge, New Haven, Conn.

Morgan Horse for Sale.—J. Dorr, Scottsville, N. Y.

Premium Chester County White Hogs.—Thos. Wood, Penningtonville, Pa.

Rochester and Lake Avenue Commercial Nurseries.—J. Donnellan & Co., Rochester, N. Y.

Poultry for Sale.—S. Smith, Darien Depot, Conn.

Dorking Fowls.—A. Sintzenich, Rochester, N. Y.

Pear Seeds and Seedlings.—B. M. Watson, Plymouth, Mass.

Rochester Central Nurseries, Chinese Sugar Cane Seed.—C. W. Seelye, Rochester, N. Y.

ADVERTISEMENTS,

To secure insertion in the FARMER, must be received as early as the 10th of the previous month, and be of such a character as to be of interest to farmers. TERMS—Two Dollars for every hundred words, each insertion, PAID IN ADVANCE.

DORKING FOWLS.

I HAVE for sale a few Speckled Dorkings, from imported stock, which took the FIRST PRIZE at the U. S. Agricultural Exhibition at Philadelphia. Price, $5 per pair (cock and hen); $2 per single bird. Carefully shipped by Express to any destination. Address A. SINTZENICH,
February, 1858.—1t* Rochester, N. Y.

POULTRY FOR SALE.

BREMEN, African, and Wild Geese; Wild Turkeys domesticated, large breed of Turkeys; Cayuga Black, Aylesbury, and Chinese White Ducks; White Guinea Hens; Black Spanish and Leghorn Black Polands, Golden and Silver Pheasants and Hamburgs, Black Spanish Game, Pile Game, Irish Game, White and Grey Dorkings, Brahma Poota, White Shanghai, Buff and Red Dominique Shanghai, White African Bantams, and Seabright Bantams; all pure bred and very fine. S. SMITH,
February, 1858.—1t Darien Depot, Fairfield Co., Conn.

A. O. MOORE,
AGRICULTURAL BOOK PUBLISHER,
140 FULTON STREET, NEW-YORK.

NEW WORKS JUST PUBLISHED.

Warder's Hedge Manual.

A complete treatise on Hedges, Evergreens, and all plants suitable for American Hedging, especially the Maclura, or Osage Orange—the only successful system of pruning—manipulation and management—fully illustrated with cuts of implements and processes, to which is added a treatise on

EVERGREENS—their different varieties, their propagation, transplanting and culture in the United States. By Jno. A. Warder, M. D., Ed. of Western Hort. Review and Prest. of the Cincinnati Hort. Society. 1 vol. 12 mo. Price one dollar.

Field's Pear Culture.

A treatise on the Propagation and Cultivation of the Pear in America—a full catalogue and description of the different varieties—their adaptation to Dwarfs and Standards—the best modes of pruning, with directions for ripening and preserving the fruit. Numerous engravings, carefully prepared, exhibit both the erroneous and correct methods of treatment. By Thos. W. Field. 1 vol. 12 mo. Price seventy-five cents.

Fish Culture

A Treatise on the Artificial Propagation of Fish, with the description and habits of the kinds most suitable for pisci culture, also the most successful modes of Angling for the fishes therein described. By Theodatus Garlick, M. D., Vice Prest. of the Cleveland Academy of Nat. Science. 1 vol. 8 vo. Price one dollar.

Flint on Grasses.

A Practical Treatise on Grasses and Forage Plants, with more than One Hundred Illustrations of grasses and implements. The editor of the *American Agriculturist* says: "*This is the best treatise of the kind we have seen on this important subject. We advise our readers to get the book and study it thoroughly, as we are now doing.*" By Charles L. Flint, A. M., Sec. of the Mass. State Board of Agriculture. 1 vol. 8vo. Price $1.25.

All the above works will be sent post-paid on receipt of price.

Address, A. O. MOORE,
Agricultural Book Publisher,
February, 1858.—1t 140 Fulton St., New-York.

SUGAR IS MADE!!!

OLCOTT'S BOOK, "SORGHO AND IMPHEE," or the Chinese and African Sugar Canes: Containing full instructions for making SUGAR, MOLASSES, ALCOHOL, etc., etc. Sent by mail post paid. Price $1.

IMPHEE SEED. TEN VARIETIES. BETTER THAN SORGHO.

IMPHEE SEED.—One variety, enough to plant two square rods, sent by mail pre-paid, with the book for six cents more in postage stamps. Each additional variety of Imphee, *six cents.—Only sent to those who order the book.*

Gov. J. H. Hammond, of South Carolina, who raised the above seed, testifies, under date of Nov. 26, 1857, that he does not recollect any variety of the Imphee which is inferior to the Sorgho, while many varieties *have a larger stalk, yielded more juice, and marked a higher degree on the saccharometer;* and in a letter to the undersigned, of Jan. 18th, 1858, Gov. Hammond says: "I think these seeds well worth distributing. They produce a Sugar Cane at least equal to the Sorgho in all respects, and some of them are twice the size. I am inclined to think we shall ultimately find several of the varieties (ripening at different periods) *superceding the Sorgho altogether.* I plant this year 60 acres of the cane. Of these, four will be planted in Sorgho, and the remainder in Imphee."

A supplement to "The Sorgho and Imphee," containing the American experiments of 1857, with J. S. Lovering's statement of his successful manufacture of Brown and White Sugar from the Sorgho, will accompany the book. Address

A. O. MOORE, Agricultural Book Publisher,
February, 1858.—1t 140 Fulton Street, New York.

HAMILTON NURSERIES, C. W.

IN ADDITION to a large assortment of *young* Nursery Stock, we offer, at low prices for cash or short approved credit,

125,000 First class Apple Trees, four years old;
12,000 Plum Trees, two and three years; *very fine.*
5,000 Cherry Trees;

And all the Small Fruits. E. KELLY & CO.,
January, 1858.—2t Hamilton, C. W.

THOMAS WOOD

CONTINUES to ship to order, to any part of the Union, his celebrated Premium Chester County White Hogs, in pairs not akin, on reasonable terms. Address THOS. WOOD,
February, 1858.—1t Pennington ville, Chester Co., Pa.

SEEDS! SEEDS! SEEDS!

THORBURN'S NEW DESCRIPTIVE CATALOGUE OF VEGETABLE, FIELD, AND FRUIT SEEDS, FOR 1858, with directions for cultivating vegetables, is now ready, and will be sent to applicants enclosing a three cent stamp.

The subscribers offer, of the growth of 1857, and of the very finest qualities, their usual extensive assortment of SEEDS, comprising many *novelties* and every tested desirable variety known in the several departments of

VEGETABLE, FIELD, FLOWER, TREE, AND FRUIT SEEDS.

They would particularly call the attention of cultivators and amateurs to the following

Choice Peas.

EXTRA EARLY DANIEL O'ROURKE—The earliest known.
" " SANGSTER'S No. 1—A great favorite.
" " TOM THUMB—Very fine growing, but 4 inches high.
EARLY SEBASTOPOL—New and good.
CHAMPION OF ENGLAND—One of the very best.
DWARF AND TALL SUGAR—Edible pods.
HAIE'S DWARF MAMMOTH—Superb.
HARRISON'S GLORY AND PERFECTION—New and very productive.
NAPOLEON AND EUGENIE—Both new and early, wrinkled.
EPPS' LORD RAGLAN—New and superb.
EPPS' MONARCH— " "
CARTER'S VICTORIA—Fine, wrinkled.
BRITISH QUEEN—One of the best late.
With thirty other standard sorts, for which see catalogue.

ALSO,

EARLY PARIS, NONPARIEL, and LENORMAND'S CAULIFLOWER;
EARLY WAKEFIELD, OX-HEART, and WINNINGSTADT CABBAGE;
EARLY and GIANT WHITE and RED SOLID CELERY;
PRIZE CUCUMBERS, for frames;
EARLY TOMATOES;
SWEET SPANISH AND BULL-NOSE PEPPER;
EARLY CURLED LETTUCE;
EARLY CURLED PARSLEY;
EXTRA EARLY TURNIP BEET;
EARLY WHITE VIENNA KOHL-RABI;
WINTER CHERRY or STRAWBERRY TOMATO;
APPLE AND PEAR SEEDS;
MAHALEB CHERRY PITS;
HAVANA TOBACCO SEED;
DIOSCOREA BATATAS or CHINESE POTATO

With thousands of other SEEDS of the same superior qualities as have heretofore afforded such universal satisfaction, and which can be recommended with the fullest confidence as unsurpassed for genuineness.

AFRICAN IMPHEE—genuine, as raised by Mr. L. Wray; $1 per lb.
SORGHUM, or CHINESE SUGAR CANE; 25 cts. per lb.

Flower Seeds.

The collection this season is unusually large and choice, embracing many novelties.

Orders by mail will have immediate attention.

J. M. THORBURN & CO.,
February, 1858—3t 15 John street, New York.

CRANBERRY PLANTS.

THE Bell variety is best adapted for general cultivation. Circulars will be forwarded to applicants.

New Rochelle Blackberry.

Genuine plants, at low prices, by the dozen or hundred. (For cultivation, see circular.)

Hop Tree,

For ornament and use; superior to the common Hop.

Raspberries.

Dr. Brinckle's Orange, $1.25 per dozen.
Red Antwerp, and other choice varieties, 60 cents per dozen; $4 per hundred.
Bagley's New Everbearing, $1 per dozen.

Grapes.

Isabella—one year, $10 per hundred; two years, $18 per hund.
Catawba— " " " " " "

With a full assortment of Fruit, Ornamental, and Evergreen Trees, Shrubs, Vines, &c.

For further particulars, see Catalogue, which will be forwarded to applicants. F. TROWBRIDGE,
February, 1858.—1t New Haven, Conn.

MORGAN HORSE FOR SALE.

FOR SALE, in whole or in part, or in exchange for western land, a Morgan Horse (entire) of fine figure and action, seven years old. J. DORR,
February, 1858.—3t Scottsville, Monroe Co., N. Y.

THE GENESEE FARMER FOR 1858.

During the past year, the circulation of the Genesee Farmer has nearly doubled. We believe it has now a larger list of subscribers than that of any similar journal in the world. This is mainly due to the voluntary efforts of the friends of Agricultural and Horticultural Improvement, who have kindly consented to act as agents, in procuring and forwarding the names of subscribers in their respective districts. To Postmasters, especially, we are under great obligations, for their disinterested labors in increasing the circulation of the Farmer and Rural Annual.

The Genesee Farmer is the only fifty cent agricultural paper in this country that is not made up from a weekly paper. It contains as much matter as any of the dollar monthlies, and much more than many of them. It has a larger and more extensive list of correspondents than any similar journal in the world. It is published in one of the finest agricultural and fruit-growing sections in the United States, and we number among our correspondents many of the best practical farmers and gardeners in the country. The paper is not local in its character. No farmer nor fruit-grower in any section of the Union, or in the adjoining Provinces, can read a single number without getting some hint that may prove valuable.

Encouraged by past favors, we have determined to offer the following liberal

LIST OF PREMIUMS FOR 1858.

SPECIFIC PREMIUMS.

1. To every person who sends us Eight Subscribers, (*at our lowest terms of thirty-seven and a half cents each,*) we will send, postage paid, a copy of our beautiful twenty-five cent book, the *Rural Annual* for 1858

2. To every person who sends us Sixteen subscribers, (at our lowest club terms of *thirty-seven and a half cents each,*) we will send one extra copy of the *Genesee Farmer* and one copy of the *Rural Annual.*

3. To every person sending us Twenty-Four subscribers, as above, we will send two copies of the *Rural Annual* and one extra copy of the *Farmer*, or any agricultural work valued at fifty cents, postage paid.

4. To any person ordering Thirty-Two copies of the *Farmer*, as above, we will send three copies of the *Rural Annual* and one extra copy of the *Farmer*, or any agricultural work valued at seventy-five cents, postage paid.

5. For Forty, four copies of the *Rural Annual* and one extra copy of the *Farmer*, or any agricultural book valued at $1.00, postage paid, or four extra copies of the *Farmer.*

6. For Forty-Eight, five copies of the *Rural Annual* and one extra copy of the *Farmer*, or any agricultural book valued at $1.25, postage paid, or five extra copies of the *Farmer.*

For larger numbers, books or papers will be given in the same proportion.

☞ To save expense to our friends, we pay the postage on all these works, and persons who are entitled will state what they wish sent, and make their selections when they send orders; or, if their list is not complete, if wished, we will delay sending until the club is full.

LARGE APRIL PREMIUMS

For the Greatest Number of Subscribers.

In order to excite a little competition among our friends everywhere, as well as to reward them for their voluntary labors in behalf of our journal, we make the following liberal offers. Those who do not get the premiums offered below, are sure of the above, so that we have no blanks.

1. FIFTY DOLLARS, in Agricultural Books (at the lowest prices), to the person who shall send us the largest number of subscribers at the lowest club price of 87½ cents, before the 15th day of April next, so that we may announce the successful competitors in the May number.

2. THIRTY DOLLARS, in Agricultural Books, to the person who shall send us the second highest number, as above.

3. TWENTY-FIVE DOLLARS, in Agricultural Books, to the person who shall send us the third highest list, as above.

4. FIFTEEN DOLLARS, in Agricultural Books, to the person who shall send us the fourth highest list, as above.

5. FOURTEEN DOLLARS, in Agricultural Books, to the person who shall send us the fifth highest list, as above.

6. THIRTEEN DOLLARS, in Agricultural Books, to the person who shall send us the sixth highest list, as above.

7. TWELVE DOLLARS, in Agricultural Books, to the person who shall send us the seventh highest list, as above.

8. ELEVEN DOLLARS, in Agricultural Books, to the person who shall send us the eighth highest list, as above.

9. TEN DOLLARS, in Agricultural Books, to the person who shall send us the ninth highest list, as above.

There is not a town in the United States where any person, by showing his neighbors a copy of the paper and asking them to subscribe, might not take some of the above Premiums.

The Premiums will be promptly paid. The Books can be selected, by the person taking a Premium, from the very complete list which we publish in our advertising columns, or we will get any works which are required, and furnish them at the lowest retail price of the publishers. Our object in offering Books is to increase their circulation throughout the country.

Clubs are not required to be at one Post Office, or sent to one address. We send wherever the members of the club may desire. Names can be added to a club at any time.

RURAL ANNUAL AND GENESEE FARMER IN CLUBS.

Every subscriber to the Farmer should have a copy of the Rural Annual. In clubs of eight, we send the Farmer for one year and a copy of the Rural Annual for fifty cents. In other words, for Four Dollars we will send *eight copies* of the Farmer for one year and eight copies of the Rural Annual. For Eight Dollars we will send *sixteen copies* of the Farmer and *sixteen copies* of the Rural Annual, and one extra copy of each for the person who gets up the club.

Any person sending us Three Dollars for a club of eight of the Genesee Farmer, shall receive one copy of the Rural Annual for his trouble.

We send the club to one address, or write the name of each subscriber on his paper, as requested.

Postage.—The postage on the Farmer sent to any place in the State of New York, paid quarterly in advance, is three cents a year; to any other place in the United States, five cents a year. We pay the American postage on all papers sent to the Canadas, or any of the other British Provinces. In all cases we pay the postage on the Rural Annual.

Our Agents, and Competitors for the above Premiums, will remember that our terms are always IN ADVANCE. One Copy, Fifty Cents a Year; Five Copies for Two Dollars; Eight Copies for Three Dollars, and any greater number at the same rate (*three shillings per copy.*)

☞ Subscription Money, properly enclosed, may be sent by mail at our risk, *and you need not "register" the letters.* We should feel obliged if our western friends would send us, if convenient, New York, Canada, or Eastern bills. Small sums may be sent in gold or postage stamps.

Address JOSEPH HARRIS,
Rochester, N. Y.

Prices of Agricultural Products at the Principal Markets in the United States, Canada and England.

	NEW YORK, Jan. 28th.		PHILADELPHIA, Jan. 28th.		ROCHESTER, Jan. 30th.		CHICAGO, Jan. 28th.		TORONTO, Jan. 28th.		LONDON, Eng., Jan. 11th.	
Beef, per 100 lbs.,					$3.50 @	$5.00			$4.00 @	$6.00	$8.25 @	$15.00
do mess, per bbl.,	$9.00 @	$10.00	$17.00 @				$8.00 @	$10.00				
Pork, per 100 lbs.,	6.50	7.50			5.00	6.00			4.75	5.50	10 50	13.00
do mess, per bbl.,	14.75	14.80	15.00	16.00	16.00		12.00	13.00	12.00	12,75		
Lard, per lb.,	.09	.09¼	.09	.10½	.09½	.10	.08				.13	.17
Butter, do	.19	.19	.11	.20	.10	.15	.10	.15	.14	.20	.19	.20
Cheese, do	.06	.08			.07	.09	.10	.12			.11	.15
Flour, per bbl.,	4.25	7.00	4.50	5.75	5.50	6.50	3.00	4.50	3.40	4.25	6.25	7.25
Wheat, per bush.,	1.00	1.35	.95	1.35	1.00	1.20	.56½	.95	.60	.87½	1.29	1.39
Corn, shelled, per bu.,	.65	.70	.57	.62	.50	.55	.39	.44			1.02	1.06
Rye, do	.78	.75	.70		.50	.56	.50		.55	.60	.90	1.02
Oats, do	.33	.45	.33	.34	.28	.36	.23	.35	.27	.30	.60	.99
Barley, do	.70	.80			.40	.50	.25	.40	.30	.35	.78	1.20
Clover Seed, do	4.89	5.50	5.00	5.75	4.00	4.50	5.00					
Timothy Seed, do	1.75	2.25	2.00	2.75	2.00	2.75	1.50	1.62½				
Flax Seed, do	1.25						.80				1.71	1.77
Hay, per ton,	13.00	15.00			6.00	10.00	3.50	7.00	9.00	16.00		
Wool, per lb.,	.35	.45			.25	.38			.15			
Wood, hard, per cord,					4.50	5.50	5.50	6.00	5.50			

CONTENTS OF THIS NUMBER.

Natural and Artificial Drainage 41
Draught of Plowing at different depths 44
The Analysis of Soil-Analyses 44
Three-Horse Whiffle-Trees 49
The Ferret—Destroying Rats 50
Suggested Items—No. 17 50
Notes for the Month, by S. W 51
Variety of Farm Products 52
Cure for Colic in Horses 52
Sheep and Sheep-Ticks 52
"Notions" on Foddering Stock 53
Agriculture in the West 53
Fattening Cattle in Winter 53
Stalls for Cows 54
Who has the oldest Horse? 54
Muck applied unmixed to the Soil 55
Artesian Wells 55
Receipt for Founder in Horses 55
Refuse Leather for Manure 55
Analysis of Soils 55
Chinese Sugar Cane in Iowa 56
Oxen vs. Horses 56
Buckwheat for a Sod Crop on the Prairie 56
Sow a variety of Grass Seeds 56
Notes from Minnesota 56
About Winter Butter 57
Anti-Chess—An Offer 57
Wheat turning to Chess—Once more 57
Seeding to Timothy Grass 57
The Wild Pigeon 58
The Genesee Farmer, and Agricultural Literature 59
Pig Breeding 59
Fattening Sheep in Winter 59
The best Time for Cutting Timber 59
What can Farmers do to elevate their Calling 60
Duties of Landlord and Tenant 60

HORTICULTURAL DEPARTMENT.

Western New York Fruit Growers' Association 61
Best Soil for Apple Orchards 61
Pruning 62
Cultivation of the Grape 63
Best Soil for Pears 63
Best Soil for the Peach and Cherry 64
Pears on Pear Stocks 64
Grapes best adapted to Western New York 64
Training Hedges 65
The Woodpecker 65
Profits of Fruit Culture 66
Making Hot-Beds 66

EDITOR'S TABLE.

Is the Genesee Farmer Twenty-seven Years old? 67
January Premiums 67
Premiums for Short Essays 67
Postage on the Rural Annual 67
The Weather and Crops in Northern Illinois 67
Food of Bees 67
Pears in Oregon 67
Cattle Poisoned by Paint 67
Crowded out 67
The United States Agricultural Society 68
Notices of the Genesee Farmer 68
Inquiries and Answers 68
List of New Advertisements 69

ILLUSTRATIONS.

Sixteen Figures illustrating Drainage 41–44
Three-Horse Whiffle-Trees—two figures 49
The Ferret 50
The Wild Pigeon 58
Specimen of a badly trained Hedge 65
" " properly " " 65
Hot-Bed 66

A. LONGETT,

No. 34 CLIFF STREET, NEW YORK,

DEALER in Peruvian, Colombian and Mexican Guano, Superphosphate of Lime, and Bone Dust.

November 1, 1857.—1y.

ROCHESTER CENTRAL NURSERIES.

Send for a Catalogue.

CHINESE SUGAR CANE SEED.—A package of this Seed, containing enough to plant half an acre of land, with plain directions for planting, cultivating, harvesting, and after treatment of the Cane, will be sent, postage paid, on the receipt of *One Dollar*. Address C. W. SEELYE.

February, 1858.—4t Rochester, N. Y.

PEAR SEEDS AND SEEDLINGS.

GOOD, healthy Pear Seedlings, 1 year, $8 per 1,000, $75 per 10,000: 2 years, $15 per 1,000, $140 per 10,000.

New England Pear Seeds in prime order for spring sowing, $3 per quart. Apple, Mazzard, Plum, Angers Quince, Mahaleb, Paradise, and Doucain Stocks, of the best quality. Catalogues to any address. Carriage paid to New York or Boston.

B. M. WATSON, Old Colony Nurseries,

February, 1858.—3t Plymouth, Mass.

J. DONNELLAN & CO.,

OF THE

ROCHESTER AND LAKE AVENUE COMMERCIAL NURSERIES,

ROCHESTER, N. Y.,

WISH to inform their friends and customers that they have on hand for Fall Sales the following select assortment of

Standard and Dwarf Fruit Trees,
Evergreen and Weeping "
Ornamental Deciduous and Climbing Shrubs,
A numerous variety of select French and Domestic Roses, Pæonies, Phloxes, &c. &c.,
Hardy Herbaceous and Hedge Plants,
Bulbous Roots, Double Dahlias, &c., &c.,

which they will sell in quantities to suit purchasers, and on moderate terms.

100,000	3 and 4	year old	Apple Trees,	choicest	kinds,	
140,000	2	"	"	"	"	"
180,000	1	"	"	"	"	"
10,000	2	"	Peach	"	"	"
10,000	1	"	"	"	"	"

with an average quantity of Pears, Plums, Cherries, &c.

We have also 100,000 Manetti Stocks for Roses, first quality.
5,000 1 and 2 year old Horse Chestnut Seedl'gs.
100,000 assorted Apple Scions, from the most approved kinds.

☞ Descriptive and Price Catalogues furnished gratis.

Rochester and Lake Avenue Com'l Nurseries, Feb. 1, 1858.—2t

STEREOTYPED BY C. H. M'DONELL, ROCHESTER, N. Y.